Ind. J. Phys. Anthrop. & Hum. Genet. Vol. 36. No. 1, (2017) : 39-49

PREVALENCE OF DENTAL CARIES IN RELATION TO ORAL HYGIENE, DIET AND SOCIOECONOMIC FACTORS AMONG MUSLIM CHILDREN OF FARIDABAD DISTRICT, HARYANA

Swati Sethi, Rajan Gaur, Ashish Jain and Vijay Lakshmi Sharma

ABSTRACT

Dental caries is one of the most prevalent and most neglected oral health diseases. It often involves high treatment costs, making caries diagnosis a very important part of health assessment.The present cross-sectional study is aimed at determining the prevalence of dental caries and the associated factors among Muslim children aged 6-13 years of Faridabad District of Haryana. A total of 455 children, comprising of 228 males and 227 females, were examined in broad daylight for caries presence. Overall prevalence of caries was found to be 46.59%. Prevalence in males was higher (49.56%) than the females (43.61%), though there was no statistical difference between the two sexes ($p \leq 0.05$). Mean Decayed-Missing-Filled Permanent Teeth (*DMFT*) was 2.04 and mean decayed-extracted-filled deciduous teeth (*deft*) was 2.38. Prevalence of caries was found to be related to socio-economic status, mother's education, oral hygiene habits and sugar intake. Therefore, controlling these factors may reduce the incidence of caries and thus improve overall health of an individual, particularly of children.

Key Words: Muslims, Caries prevalence, Oral hygiene, Haryana.

INTRODUCTION

Dental caries is one of the most prevalent chronic oral diseases affecting all age groups, irrespective of age, sex, race and socio-economic status (Peterson, 2003). It has significant effect on the overall health and mental well-being of an individual. Though it has a multifactorial etiology, it is still highly preventable. Plethora of literature exists describing the distribution, nature and causes of the disease in the Indian population (Sudha *et al*., 2005; Dhar *et al*., 2007; Goyal *et al*., 2007; Grewal *et al*., 2009; Moses *et al.,* 2011; Basha and Swamy, 2012; Elangovan *et al.*, 2012; Shingare *et al.*, 2012; Joshi *et al.*, 2013; Ingle *et al.*, 2014; Mittal *et al*., 2014; Sharma *et al.,* 2015;

Swati Sethi, Research Scholar, Centre for Public Health, Panjab University, Chandigarh, *E-mail: sethi.ssrs.swati@gmail.com;* **Rajan Gaur**, Professor, Department of Anthropology, Panjab University, Chandigarh, *E-mail: rajan_gaur7@yahoo.com*; **Ashish Jain**, Principal-cum-Professor, Dr. HSJ Institute of Dental Sciences, Panjab University, Chandigarh, *E-mail: ashish@justice.com*; **Vijay Lakshmi Sharma**, Professor, Department of Zoology, Panjab University, Chandigarh, *E-mail: vijaylsharma25@yahoo.co.in*

Aranganal *et al*., 2016; Hiremath *et al*., 2016; Reddy *et al*., 2017). Most of these studies focus on the prevalence of the disease in school-going children as the disease affects 60-90% of the children globally (Peterson *et al*., 2005).In general,oral hygiene is poor during the mixed dentition period due to carefree age, emotional stresses of the child, frequent intake of refined sugars and soft and sticky foods. During this stage, there is also shedding of deciduous teeth and eruption of permanent teeth, which may also get affected by the caries in the overlying deciduous tooth. Thus, preservation of the permanent as well as deciduous teeth is important for overall dental health (Chopra *et al*., 1983).Considering the high costs related to the various treatment options available, it is advisable to detect the disease at an early stage to reduce the treatment costs. A perusal of literature reveals that data pertaining to the prevalence of dental caries among the Muslims of Haryana is scanty. In view of this, the present study was carried out to determine the status of dental caries and associated factors in Muslim children aged 6 to 13 years of Faridabad District of Haryana.

MATERIALS AND METHODS

The present study was carried out in the Faridabad District of Haryana from April 2016 to September 2016. Ethical permission was taken before hand from the Institutional Ethical Committee, Panjab University, Chandigarh (PUIEC) vide letter no. PUIEC/2014/135/1-A/29/09 dated October 15, 2015. Permission for data collection in the schools was obtained from Director, Education Board, Haryana vide letter no. 18/83-2015 E.E (4) dated June 9, 2015. Before data collection, written informed consent of the subjects was also obtained. Six schools, catering to the Muslim population, were visited and a total of 455 Muslim students (228 males and 227 females) were examined. The children were divided into eight age groups of one year each using age mid points. The decimal age of each child was calculated from date of birth and date of examination, using the decimal age calendar of Tanner and Whitehouse (1966).

Each subject was examined in broad daylight for the presence of caries with the help of a dental explorer and a mouth mirror. A tooth was considered carious when the explorer tip got caught or resisted removal after moderate to firm pressure after being moved onto the tooth surface and when the carious lesion was clinically visible and obvious.Decayed-Missed-Filled Permanent Teeth (DMFT)Index was calculated using the formula given by Klein *et al*. (1938) and decayed-extracted-filled deciduous teeth (deft) Index was calculated using formula given by Gruebbel (1944). In addition, each subject was administered a schedule to record their socio-demographic details, oral hygiene practices and dietary habits such as frequency of consumption of sugary snacks/candies in-between meals per week.All the data was compiled and subjected to statistical analysis to compute descriptive statistics, Students' t-test, Chi-square test and Correlation coefficient, using Statistical Package for the Social Sciences.

RESULTS

In the present sample, most (44%) of the subjects belonged to the lower middle class, as per the updated Kuppuswamy Scale (1976) given in Oberoi (2015). A

majority of the mothers (38%) of the subjects were illiterate or educated up to primary level. Only a few (2%) of the mothers were educated up to graduate or post-graduate levels.

Table 1 shows the prevalence (%) of dental caries among the Muslim children of Faridabad in the present sample. It can be seen in the table that overall caries prevalence was 46.59%, with males showing a comparatively higher prevalence (49.56%) than the females (43.61%). However, the gender differences in the prevalence of caries in the sample under study were not significant, as indicated by chi-square test ($p \leq 0.05$). In males, the highest prevalence was recorded at 11 years and in females, the prevalence was highest at 8 years.

Table 2 shows the mean *DMFT* (Decayed-Missed-Filled Permanent Teeth) and mean *deft* (decayed-extracted-filled deciduous teeth) in the present sample, according to age by combining the sexes.The mean DMFT was 2.04 and the mean *deft* was 2.38. The highest value of mean DMFT (3.0) was recorded at 6 years while that of *deft* (2.71) was recorded at 11 years.

As the cohort under study belongs to the mixed dentition period, there were individuals with different types of teeth affected by caries. The analysis showed that deciduous teeth were more affected than the permanent teeth. Table-3 depicts age-wise prevalence of caries in deciduous and permanent dentition. It is clear from the table that the deciduous teeth were more affected in younger age groups. But as the age increases, the permanent teeth were affected more. This can be attributed to the fact that the deciduous teeth are gradually shed as the age increases.

In the present sample, the prevalence of caries was more in mandibular teeth as compared to the maxillary teeth, both in deciduous and permanent dentition. (Figure 1).

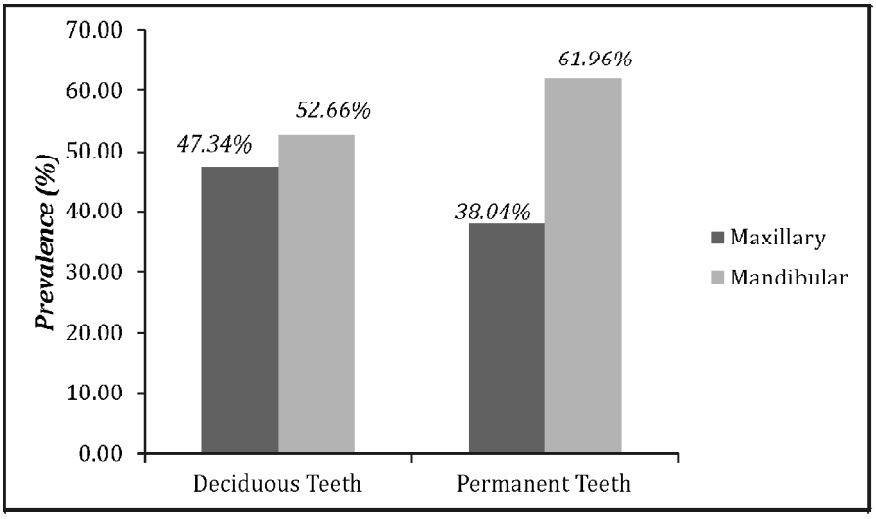

Figure 1: Prevalence of dental caries according to the dental arch affected

When the caries prevalence was analyzed in relation socio-economic status of the subjects (Figure 2), it was found that the prevalence was highest (50.64%) in the lower socio-economic group. The lowest prevalence was seen in the upper socio-economic group (38.78%). Caries prevalence was found to decrease with an increase in the socio-economic status of the children.

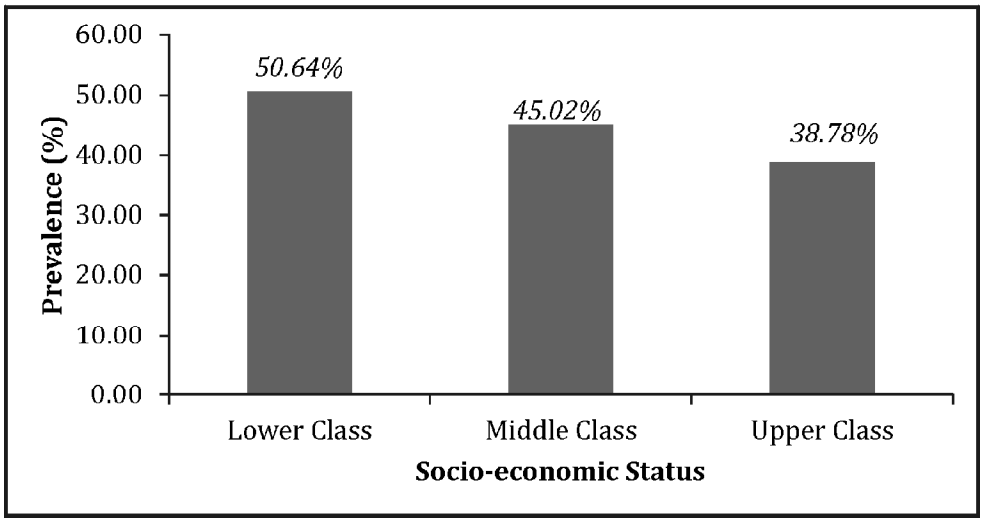

Figure 2: Prevalence of dental caries according to socio-economic status

It is well known that oral hygiene habits play an important role in the development of caries. These habits are acquired in a household and largely depend upon the education status and awareness of the elders. In this study, we found a negative correlation ($r = -0.881$) between presence of caries in the children with the education status of their mothers. As the education status of mothers increases, presence of caries in the children decreases (Figure 3).

Brushing habits are known to influence the oral health. In the present study, the prevalence of dental caries was also analyzed in relation to brushing and mouth rinsing habits of the children. It has been noticed that the number of individuals with caries was significantly ($p \leq 0.05$) higher in those children who did not brush their teeth at night (n=189) than in those who brushed their teeth at night (n=23), as indicated by student's t-test (t-value = 88.347). Similarly, significantly ($p \leq 0.05$) higher number of children were affected with caries who did not rinse their mouths after meals (n=149) as compared to those who rinsed their mouth after meals (n=63), as revealed by student's t-test (t-value = 41.230). Figure 4 shows higher prevalence of dental caries in children who did not brush their teeth at night and those who did not rinse their mouth after meals.

Studies have revealed that intake of sugary snacks and candies, particularly sticky ones, play a role in the development of dental caries. The number of individuals with caries was significantly($p \leq 0.05$) higher among those children who consumed

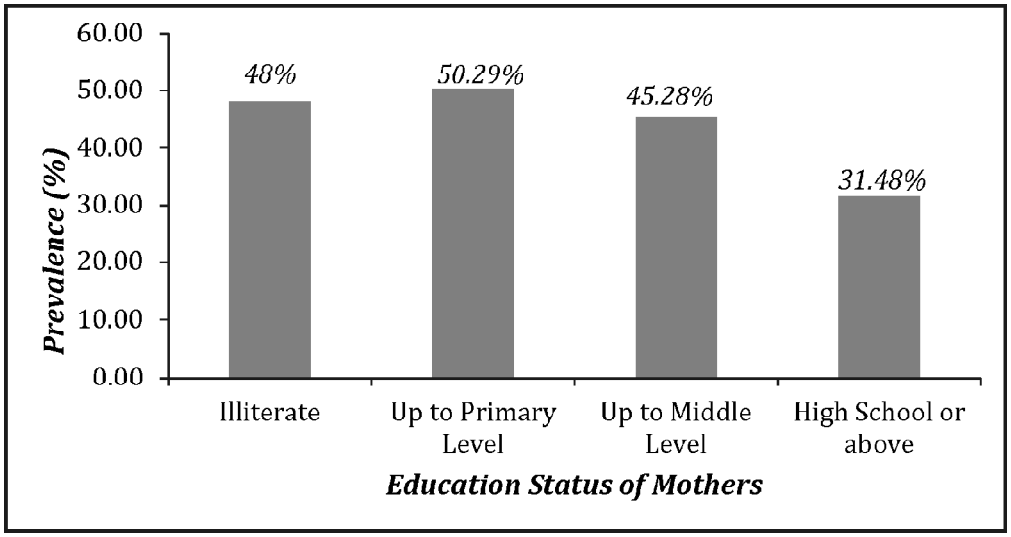

Figure 3: Prevalence of dental caries according to the education status of the mothers

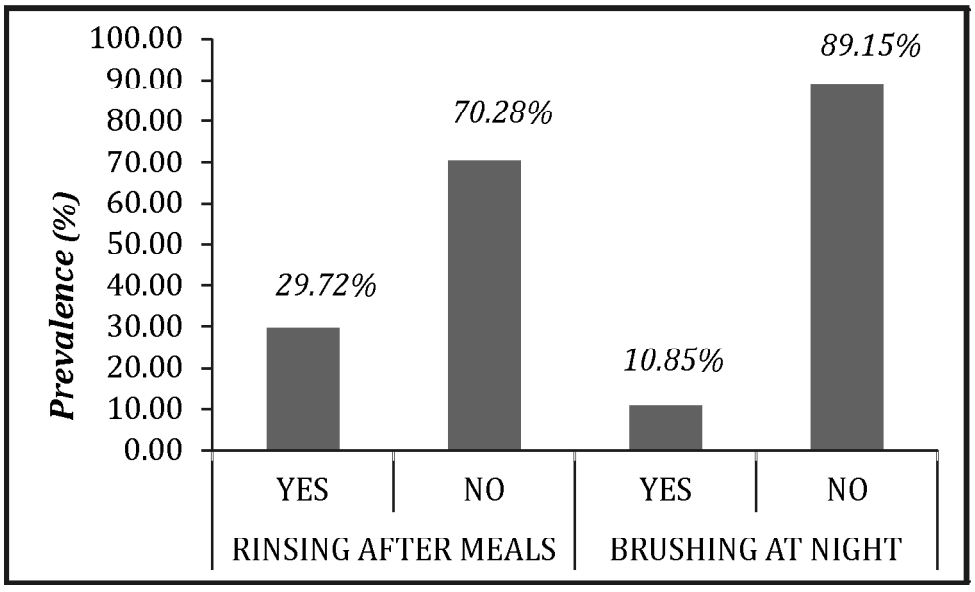

Figure 4: Prevalence of dental caries according to oral hygiene habits

these sugary snacks or candies in between meals 5 or more times per week than those who consumed these less than 5 times per week (t-value = 76.210).

In the present sample, the number of carious teeth ranged from 1 to 15 in an individual. Carious teeth were significantly less in children whose consumption of sugary snacks in-between meals was limited to 1 to 4 times a week than those who consumed these more than 4 times a week (Table 4).

DISCUSSION

Dental caries is one of the significant and most neglected problems in school-going children as well as adults. The World Health Organization (WHO) has recognized dental caries as a pandemic and reported its prevalence among school children to range from 60% –90% (Peterson *et al*., 2005).

The present study is an attempt to assess the prevalence of caries in among the Muslim children because of the paucity of such information on this community. The study showed that the prevalence of caries in the Muslim children aged 6 – 13 years was 46.59%. Similar overall prevalence (46.75%) was reported by Dhar *et al*. (2007) in Udaipur District and by Prabhakar *et al*. (2016) in Chandigarh.Present findings are also somewhat similar to those reported by Hari Prakash and Nasim Shah (53.8%) in National Oral Health Survey (2004). Grewal *et al*. (2009), Das *et al*., (2016), Rodrigues and Damle (1998) and Shourie (1942), have also reported caries prevalence similar to the one given in the National Oral Health Survey. However, higher caries prevalence was reported by some of the studies (Joshi *et al*., 2013; Shingare *et al*., 2012; Moses *et al*., 2011; Grewal *et al*., 2009; Rao *et al*., 1999; Mishra and Shee, 1979). In the present study, prevalence of caries in males was 49.56% and in females it was 43.61%, which are similar to the findings of Dhar *et al*. (2007) who have reported slightly higher prevalence in males. However, there was no statistically significant difference in the prevalence of caries between the two genders in the present sample. This is supported by the results reported by some of the studies where there was no difference in the prevalence of caries between the two genders (Arangannal *et al*., 2016; Mittal *et al*., 2014, Sudha *et al*., 2005; Dhar *et al*., 2007; Shetty and Tandon, 1988; Jai 1951). In contrast, some studies have showed higher prevalence in boys than girls (Vacher, 1952; Auckland and Bjelkaroey, 1982; Gaikwad and Indurkar, 1992) and while others showed higher prevalence in girls than boys (Mishra and Shee, 1979; Saimbi *et al*., 1983; Singh *et al*., 1985).In the present sample, mandibular teeth are more affected than maxillary teeth in deciduous as well as permanent dentitions. Bhardwaj (2014) however, reported maxillary teeth to be affected more than mandibular teeth among children.

The prevalence was found to be highest (50.64%) in the lower socio-economic group with lowest prevalence seen in the upper socio-economic group (38.78%). These findings are in accordance with the observations of Datta and Datta (2013), Moses *et al*.(2011), Sudha *et al*. (2005) and Singh *et al*. (1985). This could be due to lack of awareness and inability to afford higher treatment costs associated with the dental treatments. However, Chandra and Chawla (1979) observed higher caries prevalence in children belonging to higher socio-economic status, which could be attributed to higher frequency of consumption of refined sugars.

In the present study, presence of caries was negatively correlated with the education status of the mothers. This may be due to the fact that mothers who are more literate are probably better aware of the importance of the oral hygiene. This finds support in the observations of Chand *et al*. (2014), who reported that mother's oral

hygiene knowledge and practices have significant impact on the oral hygiene status of the children and thus, in turn, development of caries.

Caries development is a multifactorial process in which oral hygiene practices play a major role. The prevalence of caries, in the present study, was higher in children who did not brush their teeth at night and who did not rinse their mouths after meals. Khan *et al*. (2011) also showed that brushing at night decreased the development of caries. Similarly, Kapoor *et al*. (1980) observed a minimum prevalence of caries in children who rinsed their mouth with water after meals.

The number of carious teeth was less in those Muslim children under study, whose consumption of sugary snacks in-between meals was limited to 1 to 4 times a week than those who consumed these more than 4 times a week. Similar findings were reported by Joshi *et al*. (2013), who observed a direct association between frequency of sugar consumption and dental caries. This shows that consumption of sugar in the present sample is one of the important factors in the development of caries, which is consistent with the findings of Shetty and Tandon (1988) and Gupta *et al*. (1988).

Thus, the present findings on 6-13 year old Muslim children of Faridabad district are similar to the findings of other workers. It can be concluded from the results of the study that the development of dental caries depends highly upon the socio-economic factors, parents' education level, oral hygiene habits and dietary factors. Therefore, the prevention of caries is possible by controlling these modifiable factors.

Several other factors may also play a role in the development of caries such as fluoride level in drinking water of the study area, genetic pre-disposition, etc., which also need to be investigated. The present results pertain to the caries prevalence and oral hygiene of Muslim children of Faridabad District of Haryana only. These results do not necessarily represent caries and oral hygiene status among the Muslim children in general, because of geographic and cultural practice variations in the Muslim community. More studies on other factors and in other regions are required to understand in greater detail, caries prevalence and oral hygiene and associated factors among Muslim population of our country.

Table 1: Prevalence (%) of caries among the Muslim children of Faridabad District, according to age and sex

Age Group (years)	*Male*	*Female*
6	28.57% (8)*	3.57% (1)
7	27.59% (16)	15.52% (9)
8	27.66% (13)	29.79.% (14)
9	25.53% (12)	23.40% (11)
10	26.92% (21)	29.49% (23)
11	30.99% (22)	19.72% (14)
12	12.66% (10)	24.05% (19)
13	23.40% (11)	17.02% (8)
Total	49.56% (113)	43.61% (99)

*Values in parentheses represent number of individuals

Table 2: Distribution of mean DMFT and mean *deft* across age groups in the present sample

Age Group (years)	*Mean DMFT*	*Mean deft*
6	3.0	2.5
7	1.33	2.33
8	1.71	2.31
9	1.33	2.55
10	2.43	2.06
11	1.9	2.71
12	2.28	2.57
13	1.93	1.67
Combined	**2.04**	**2.38**

Table 3: Prevalence of caries according to the type of dentition (deciduous or permanent) affected

Age Group (years)	*No. of Individuals with Carious Deciduous Teeth*	*No. of Individuals with Carious Permanent Teeth*	*No. of Individuals with Caries in Deciduous and Permanent Dentitions*
6	8	1	0
7	22	1	2
8	20	1	6
9	17	3	3
10	23	9	12
11	16	8	12
12	11	15	3
13	5	13	1

Table 4: Number of individuals along with number of carious teeth according to sugary snacks/candies consumption

No. of Carious Teeth	*Sugary Snacks/Candies in-between Meals per Week*		
	0 - 4 Times	*5 or More Times*	*t-value*
1	12 (16.22%)	62 (83.78%)	42.6*
2	7 (13.46%)	45 (86.54%)	39.030*
3	5 (17.86%)	23 (82.14%)	24.712*
4 or more	7 (12.07%)	51 (87.93%)	43.554*

* Significant difference ($p \leq 0.05$)

REFERENCES

Arangannal, P., Mahadev, S.K., and J. Jayaprakash, 2016. Prevalence of dental caries among school children in Chennai, based on ICDAS II. *Journal of Clinical Diagnostic Research*, 10(4): 9-12.

Auckland, S., J. and Bjelkaroey, 1982. The dental health of school children in Betul district, Madhya Pradesh. *Journal of Indian Dental Association*, 54: 367-369.

Basha, S. and H.S. Swamy, 2012. Dental caries experience, tooth surface distribution and associated factors in 6- and 13-year old school children from Davangere, India. *Journal of Clinical and Experimental Dentistry*, 4E: 210-216.

Bhardwaj, V.K., 2014. Dental caries prevalence in individual tooth in Primary and permanent dentition among 6-12 year-old school children in Shimla, Himachal Pradesh. *International Journal of Health & Allied Sciences*, 3: 125-128.

Chand, S., Chand, S., Danker, K. and A. Chaudhary, 2014. Impact of mother's oral hygiene knowledge and practices on oral hygiene status of their 12-year-old children: A cross-sectional study. *Journal of Indian Association of Public Health Dentistry*, 12:323-329.

Chandra, S. and T.N. Chawla, 1979. Incidence of dental caries in Lucknow school children.*Journal of Indian Dental Association*, 51:109.

Chopra, S., Vacher, B.R., and J.R. Taneja, 1983. Dental caries experience during the period of mixed dentition.*Journal of Indian Dental Association*, 55:99-104.

Datta, P. and P.P. Datta, 2013. Prevalence of dental caries among school children in Sundarban, India.*Epidemiology*, 3(4):135-138.

Das, U.M., Beena, J.P. and U. Azher, 2009. Oral health status of 6 and 12 year-old school going children in Bangalore city: an epidemiological study. *Journal of Indian Society of Pedodontics & Preventive Dentistry*, 27:6-8.

Dhar, V., Jain, A., Van Dyke, T.E. and A. Kohli, 2007. Prevalence of dental caries and treatment needs in school-going children of rural areas in Udaipur district. *Journal of Indian Society of Pedodontics & Preventive Dentistry*, 29:119-121.

Elangovan, A., Mungara, J. and E. Joseph, 2012. Exploring the relation between body mass index, diet, and dental caries among 6-12-year-old children. *Journal of Indian Society of Pedodontics & Preventive Dentistry*, 30:293-300.

Gaikwad, R.S. and M.S. Indurkar, 1993. Prevalence of dental caries in school going children of Aurangabad in the year 1992. *Journal of Indian Dental Association*, 64:325-326.

Goyal, A., Gauba, A., Chawla, H.S., Kaur, M. and A. Kapur, 2007. Epidemiology of dental caries in Chandigarh school going children and trends over the last 25 years. *Journal of Indian Society of Pedodontics & Preventive Dentistry*, 25:115-118.

Grewal, H., Verma, M. and A. Kumar, 2009. Prevalence of dental caries and treatment needs in the rural child population of Nainital district, Uttranchal. *Journal of Indian Society of Pedodontics & Preventive Dentistry*, 27:224-226.

Grewal, H., Verma, M. and A. Kumar, 2011.Prevalence of dental caries and treatment needs amongst the school children of three educational zones of urban Delhi, India.*Indian Journal of Dental Research*, 22:517-519.

Gupta, A., Tiwari, A. and H.S. Chawla, 1988. Relationship of dental caries and diet: An epidemiological study in Andhra Pradesh. *Journal of Indian Society of Pedodontics & Preventive Dentistry*, 6:1-11.

Gruebbel, A.O. 1944. A measurement of dental caries prevalence and treatment services for deciduous teeth. *Journal of Dental Research*, 23:163-168.

Hiremath, A., Murugaboopathy, V., Ankola, A.V., Hebbal, M., Mohandoss, S. and P. Pastay, 2016. Prevalence of dental caries among primary school children of India – A cross-sectional study, *Journal of Clinical and Diagnostic Research*, 10(10): 47-50.

Ingle, N.A., Dubey, H.V., Kaur, N. and R. Gupta, 2014.Prevalence of dental caries among school children of Bharatpur city, India. *Journal of International Society of Preventive and Community Dentistry*, 4(1): 52-55.

Jai, K.N. 1951. Incidence of dental caries in Gujrati children. *Journal of Indian Dental Association*, 23:3-7.

Joshi, N., Sujan, S.G., Joshi, K., Parekh, H. and B. Dave, 2013. Prevalence, severity and related factors of dental caries in school going children of Vadodra city – An epidemiological study. *Journal of International Oral Heath*, 5:40-48.

Kapoor, A.K., Ray, S.K., Kaur, P., Reddy, D.C.S. and J. Nagchoudhary, 1980. Dental caries and its relationship to materials used for cleaning teeth and frequency of cleaning teeth. *Journal of Indian Dental Association*, 52:81-83.

Khan, S.A., Khan, S.Y. and R. Bahuguna, 2011. Evaluation of caries experience experience with oral health practices in Lucknow children. *Asian Journal of Oral Health & Allied Sciences*, 1:13-16.

Klein, H.T., Palmer, C.E. and J.W. Knutson, 1938. Studies on dental caries. *Public Health Report*, 53:751-765.

Mishra, F.M. and B.K. Shee, 1979. Prevalence of dental caries in school going children in an urban area of South Orissa. *Journal of Indian Dental Association*, 51:267-270.

Mittal, M., Chaudhary, P., Chopra, R. and V. Khattar,2014.Oral health status of 5 years and 12 years old school going children in rural Gurgaon, India: An epidemiological study. *Journal of Indian Society of Pedodontics & Preventive Dentistry*, 32:3-8.

Moses, J., Rangeeth, B.N. and D. Gurunathan,2011. Prevalence of dental caries, socio-economic status and treatment needs among 5 to 15 year old school going children of Chidambaram. *Journal of Clinical and Diagnostic Research*, 5(1):146-151.

Oberoi, S.S., 2015. Updating income ranges for Kuppuswamy's socio-economic status scale for the year 2014. *Indian Journal of Public Health*, 59:156-157.

Peterson, P.E., 2003. The World Oral Health Report 2003: Continuous improvement of oral health in 21st century–the approach of the WHO Global Oral Health programme. *Community Dentistry Oral Epidemiology*, 31:3-24.

Peterson, P.E., Bourgeois, D., Ogawa, H., Estupinan-Day, S. and C. Ndiaye, 2005.The global burden of oral diseases and risks to oral health. *Bulletin World Health Organization*, 83:661-669.

Prabhakar, J., John, J. and D. Srisakhti, 2016. Prevalence of dental caries and treatment needs among school going children of Chandigarh. *Indian Journal of Dental Research*, 27:547-552.

Prakash, H., and N. Shah.National oral health care programme implementation strategies, Project of DGHS, MOH & FW.Govt. of India.

Rao, A., Sequeira, S.O. and S. Peter, 1999.Prevalence of dental caries among school children of Moodbiri. *Journal of Indian Society of Pedodontics & Preventive Dentistry*, 17:45-48.

Reddy, K.S., Reddy, S., Ravindhar, P., Balaji, K., Reddy, H. and A. Reddy, 2017. Prevalence of dental caries among 6-12 years school children of Mahbubnagar District, Telangana State, India: A cross-sectional study. *Indian Journal of Dental Sciences*, 9:1-7

Rodrigues, S. and S.G. Damle, 1998. Prevalence of dental caries and treatment needs in 12-15 years old Municipal School Children of Mumbai. *Journal of Indian Society of Pedodontics & Preventive Dentistry*, 2:31-36.

Saimbi, C.S., Mehrotra, A.K., Mehrotra, K.K. and O.P. Kharbanda, 1983. Incidence of dental caries in individual teeth. *Journal of Indian Dental Association*, 55:23-26.

Sharma, V., Guota, N., Arora, V., Gupta, P. and N. Mehta, 2015. Caries experience in permanent dentition among 11-14 years old school children in Panchkula District (Haryana). *International Journal of Scientific Study*, 3:112-115.

Shetty, N.S., and S. Tandon,1988. Prevalence of dental caries as related to risk factors in school children of South Kanara. *Journal of Indian Society of Pedodontics & Preventive Dentistry*, 6:30-37.

Shingare, P., Jogani, V., Shrirang, S., Patil, S. and M. Jha, 2012. Dental Caries Prevalence among 3- to 14- year old school children, Uran, Raigad District, Maharashtra. *Journal of Contemporary Dentistry*, 2(2):11-14.

Shourie, K.L., 1942. Dental caries in children in Madras city in relation to economic and nutritional status. *Journal of Medical Research*, 30:561-572.

Singh, S., Kaur, G., and V.K. Kapila,1985. Dental disorders in primary school children of Faridkot city. *Journal of Indian Dental Association*, 57:305-308.

Sudha, P., Bhasin, S. and R.T. Anegundi, 2005. Prevalence of dental caries among 5-13 year-old children of Mangalore city.*Journal of Indian Society of Pedodontics & Preventive Dentistry*, 23:74-79.

Tanner, J.M. and R.H. Whitehouse, 1966. Notes on the use of height and weight standard charts. London: Creasey Hertford.

Vacher, B.R., 1952. Dental survey of school children in Amritsar (Punjab). *Journal of Indian Dental Association*, 24:13.