

ORIGINAL ARTICLE

Oral Health Knowledge, Awareness, and Practice among Elementary School Teachers of Darbhanga, Bihar, India

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ABSTRACT

Introduction: Educating schoolchildren on oral health are very important because healthy oral habits are developed early in life. School teachers may play a very important role in passing the preventive information. Their own oral health knowledge, attitude, and behavior should match the professional recommendations. Keeping this in mind, the present study has been conducted to assess the oral health knowledge, awareness, and practice among elementary school teachers of Darbhanga, Bihar, India.

Materials and Methods: A cross-sectional study was performed among 151 elementary school teachers in Darbhanga urban and rural block of Darbhanga district, Bihar, India, in 2017. A pre-tested 26-item questionnaire was used to evaluate the school staff knowledge, awareness, and practice about oral health. Each questionnaire composed of three parts: The first part comprised questions related to sociodemographic profile of the participant. The second part included questions based on knowledge and awareness of participants related to oral health. The third part of the questionnaire consisted of questions about oral hygiene practices and dental visit.

Results: Response rate of study participants was observed 94.4%. Most of the respondents (54.3%) agreed that bacteria, sugar, and irregular tooth brushing these all are responsible for tooth decay. About 51% said that regular tooth brushing, avoiding sweets, and regular dental visit altogether prevent tooth decay. Only 9.3% of respondents reported to be well aware about correct tooth brushing method for children. Majority of respondents (51.7%) do not know the amount of toothpaste required for tooth brushing for children. Around 58% (57.6%) of respondents do not know the role of fluoride in preventing

tooth decay. Maximum number of respondents (85.4%) does not know about dental floss. Most of the respondents (72.2%) cleaned their teeth by toothbrush and toothpaste. Only 11.3% of respondents changed their toothbrush when its bristles get frayed and merely 7.9% changed their toothbrush after every 3 months.

Conclusion: Overall knowledge of the school teachers regarding oral health was found inadequate. Their practice toward maintenance of oral hygiene was also not commendable. Oral health education must be incorporated in syllabus of educational curriculum and teachers should be trained regularly by dental professional through various dental education training programs.

Keywords: Awareness, Elementary, Knowledge, Oral health, School teachers.

How to cite this article: Kumar S, Kumar A, Upadhyay P, Kumari K, Katiyar A, Prasad R. Oral Health Knowledge, Awareness, and Practice among Elementary School Teachers of Darbhanga, Bihar, India. *Int J Prev Clin Dent Res* 2018;6(2):S38-42.

Source of support: Nil

Conflicts of interest: None

INTRODUCTION

Oral health is fundamental and is an indispensable part of general health and well-being.^[1,2] Due to the high prevalence of the dental diseases such as dental caries, periodontal disease, and various stages of malocclusion, also lack of access to the required service leads to significant absenteeism and economic loss, apart from the harmful effects on the health of the person afflicted.^[3,4] Poor oral health among children has been related to the loss of substantial hours in school each year, reduced learning, compromised school performance, and less success later in life.^[5,6] After observing adverse effects of the poor oral health, it is important to take preventive measures and create the necessary services.^[3,4]

Educating schoolchildren on oral health are very important because healthy oral habits are developed early in life. Children spend significant amount of time in school, especially during the age when their habits are being formed. The school teachers can play an important role in developing healthy habits in their students. Hence, the role of teachers during these developmental stages of the child is vital.^[7,8] It is now documented

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that school teachers have an internationally recognized potential role in school-based dental education, and considerable importance has, therefore, been attributed to their dental knowledge. Since school teachers may play a very important role in passing the preventive information and health promotion, it is important that their own oral health knowledge, attitude, and behavior match to the professional recommendations. Keeping this in mind, the present study has been conducted to assess oral health knowledge, awareness, and practice among elementary school teachers of Darbhanga, Bihar, India.

MATERIALS AND METHODS

This cross-sectional study was performed among elementary school teachers in Darbhanga urban and rural block, Darbhanga district, Bihar, in 2017. Convenient sampling was used and a total of 160 teachers were contacted, of which 151 participated in the study and responded to interview questionnaire. A study conducted between March and August 2017. The study was approved by the Institutional Review Board of the college. Permission for the study was obtained from the schools well before the commencement of the survey where the teachers were working.

A pre-tested 26-item questionnaire was used to evaluate the school staff knowledge, awareness, and practice about oral health. Each questionnaire composed of three parts: The first part comprised questions related to sociodemographic profile of the participant. The second part included questions based on knowledge and awareness of participants related to oral health. The third part of the questionnaire consisted of questions about oral hygiene practices and dental visit. Interview was taken by one of the investigators and response of study participants recorded in questionnaire. All the participants signed a consent form and assurance was given to them about maintaining their confidentiality. Results were presented as number and percentage of respondents for each question and were analyzed using IBM Statistical Package for the Social Sciences software Version 16 (SPSS 16.0).

RESULTS

Of 160, 151 completed questionnaires were collected (94.4% - response rate), and details of the sociodemographic characteristics of the study population are tabulated in Table 1.

Around 55.6% of the respondents were male and 44.4% were female; majority respondents belonged to the age group of 20–30 years (45.7%). Among all 40.4% of respondents belonged to 5–10 years of teaching

Table 1: Sociodemographic characteristics of the study population

| Details of variable | Number of respondents (%) |
|----------------------------|---------------------------|
| Sex | |
| Male | 84 (55.6) |
| Female | 67 (44.4) |
| Age (year) | |
| <20 | 5 (3.4) |
| 20–30 | 69 (45.7) |
| 31–40 | 41 (27.2) |
| >40 | 36 (23.8) |
| Teaching experience (year) | |
| <5 | 28 (18.5) |
| 5–10 | 61 (40.4) |
| 11–20 | 36 (23.8) |
| >20 | 26 (17.2) |
| Level of education | |
| Metric | 10 (6.6) |
| Intermediate | 63 (41.7) |
| Graduate | 53 (35.0) |
| Postgraduate | 25 (16.5) |

experience group and the level of education in 6.6% of participants was metric and 41.7% was intermediate [Table 1].

Most of the respondents (54.3%) agreed that bacteria, sugar, and irregular tooth brushing these all are responsible for tooth decay while 7.9% and 9.9% of respondents marked only bacteria and only sugar being responsible for tooth decay, respectively. According to 8.6% of respondents, only regular tooth brushing can prevent tooth decay, whereas 51% agreed that regular tooth brushing, avoiding sweets, and regular dental visit altogether prevent tooth decay. About 12.6% stated tobacco habits as a single causative factor for gum disease and 46.4% told that irregular tooth brushing, tar (plaque and calculus), and tobacco habits all are causative factor for gum disease. Around 39% of respondents answered that balanced diet, avoiding tobacco habits, regular tooth brushing, and regular dental visit these all are important in preventing gum disease.

Majority of respondents (64.9%) said that a child should brush his teeth twice daily, whereas 21.8% marked tooth brushing after each meal (snacking) as correct answer. Only 9.3% of respondents reported to be well aware about correct tooth brushing method for children. Majority of respondents (51.7%) do not know the amount of toothpaste required for tooth brushing for children and only 13.2% were well aware that amount should be of pea size. Among all 37% of participants said that horizontal teeth brushing is correct brushing for adults. Around 58% (57.6%) of respondents do not know the role of fluoride in preventing tooth decay while 23.1% were aware of it. Maximum number of

respondents (85.4%) does not know about dental floss. About 36.4% of respondents know that oral health affects general health but 42.4% do not know the importance of oral health in maintaining general health. Only 10.6% of respondent knew that toothbrush should be changed when its bristles get frayed and 9.3% said that it should be changed every 3 months. Most of them (43%) had

their knowledge about dental disease and its prevention from magazines, books, and newspapers [Table 2].

Most of the respondents (72.2%) cleaned their teeth by toothbrush and toothpaste. Almost 50% (49.7%) of study participants cleaned their teeth using horizontal brushing method. Among all 56.3% brushed their teeth once daily and only 12.6% of respondents did it after each meal (snaking). Brushing time of 55% of respondents was 5 min and only 24.5% gave correct answer which is 2–3 min. About 38.4% school teachers were using medium bristle tooth brush while 31.1% teachers used soft bristle tooth brush for teeth cleaning. Only 11.3% of respondents changed their toothbrush when its bristles get frayed and merely 7.9% changed their toothbrush after every 3 months. 86% of respondents never visited to dentist. Only 4% visited dentist regularly and 9.9% had visited dentist for dental pain [Table 3].

Table 2: Knowledge of oral health-related questions among study population

| Knowledge of oral disease | Frequency (n) (%) |
|---|-------------------|
| Causes of tooth decay | |
| Bacteria | 12 (7.9) |
| Sugar | 15 (9.9) |
| Bacteria+sugar | 26 (17.2) |
| Irregular tooth brushing | 16 (10.6) |
| All of the above | 82 (54.3) |
| Prevention of tooth decay | |
| Regular tooth brushing | 13 (8.6) |
| avoiding sweets | 18 (11.9) |
| Regular brushing and avoiding sweets both | 26 (17.2) |
| Regular dental visit | 17 (11.3) |
| All of the above | 77 (51) |
| Causes of gum disease | |
| Irregular tooth brushing | 24 (15.9) |
| Plaque and calculus (tar) | 38 (25.2) |
| Tobacco habits (smoking and chewing) | 19 (12.6) |
| All of the above | 70 (46.4) |
| Prevention of gum disease | |
| Balanced diet | 17 (11.3) |
| Avoiding tobacco habits (smoking and chewing) | 18 (11.9) |
| Regular dental visits | 16 (10.6) |
| Regular tooth brushing | 41 (27.2) |
| All of the above | 59 (39.0) |
| Number of times a child should brush | |
| Once daily | 11 (7.3) |
| Twice daily | 98 (64.9) |
| After each meals (snaking) | 33 (21.8) |
| Thrice daily | 9 (6.0) |
| Awareness of correct brushing technique specially for children | |
| Yes | 14 (9.3) |
| No | 137 (90.7) |
| Amount of toothpaste child should apply on toothbrush | |
| Full length of bristles | 32 (21.2) |
| Half-length of bristles | 21 (13.9) |
| Pea-sized amount | 20 (13.2) |
| Do not know exactly | 78 (51.7) |
| Best method of brushing for adults | |
| Horizontal | 56 (37.0) |
| Vertical | 43 (28.5) |
| Circular | 12 (7.9) |
| Combination of horizontal, circulatory, and vibratory | 40 (26.5) |
| Fluoride can prevent tooth decay | |

(Contd...)

DISCUSSION

This study presented a comprehensive view of the oral health knowledge, awareness, and practices of school teachers representative of the rural and urban block of Darbhanga district, Bihar, India. According to the best of our knowledge, it is the pioneer study of its kind among school teachers in Darbhanga. Various studies involving school teachers in other parts of India are

Table 2: Continued

| Knowledge of oral disease | Frequency (n) (%) |
|--|-------------------|
| Yes | 35 (23.1) |
| No | 29 (19.2) |
| Do not know | 87 (57.6) |
| Do you know about dental floss | |
| Yes | 22 (14.6) |
| No | 129 (85.4) |
| Does oral health affect general health | |
| Yes | 55 (36.4) |
| No | 32 (21.2) |
| Don't know | 64 (42.4) |
| Toothbrush should be changed | |
| Once in 3 months | 14 (9.3) |
| Once in 6 months | 56 (37.0) |
| Once in a year | 28 (18.5) |
| When bristles of toothbrush get frayed | 16 (10.6) |
| Do not know exactly | 37 (24.5) |
| Source of knowledge about dental disease and prevention | |
| Television advertisement | 38 (25.2) |
| Magazines, books, and newspapers | 65 (43.0) |
| Dentist | 23 (15.2) |
| From friends and relatives | 25 (16.6) |
| Oral health education is beneficial for the children | |
| Yes | 148 (98) |
| No | 03 (02) |

Table 3: Oral hygiene practices among the study population

| Oral hygiene methods practiced | Frequency (%) |
|---|---------------|
| Teeth cleaned by | |
| Toothbrush and toothpaste | 109 (72.2) |
| Finger and tooth powder | 22 (14.6) |
| Other | 20 (13.2) |
| Method of brushing | |
| Horizontal | 75 (49.7) |
| Vertical | 40 (26.5) |
| Circular | 9 (6.0) |
| Combination of horizontal, circulatory, and vibratory | 27 (17.9) |
| Frequency of brushing | |
| Once daily | 85 (56.3) |
| Twice daily | 39 (25.8) |
| After each meals (snaking) | 19 (12.6) |
| Thrice daily | 8 (5.3) |
| Brushing time | |
| 1 min | 25 (16.5) |
| 2–3 min | 37 (24.5) |
| 5 min | 83 (55.0) |
| 10 min | 6 (4.0) |
| Type of brush with bristle | |
| Soft | 47 (31.1) |
| Medium | 58 (38.4) |
| Hard | 11 (7.3) |
| Do not know | 35 (23.2) |
| Frequency of brush change | |
| Once in 3 months | 12 (7.9) |
| Once in 6 months | 48 (31.8) |
| Once in a year | 74 (49.0) |
| When bristles of toothbrush get frayed | 17 (11.3) |
| Last dental visit | |
| Within the past 6 months | 12 (7.9) |
| 6 months–1 year back | 9 (6.0) |
| Never | 130 (86) |
| Frequency of visit to dentist | |
| Regularly (every 6 months) | 6 (4.0) |
| When I have dental pain | 15 (9.9) |
| Never | 130 (86) |

indicative of the fact that there is a need to improve their oral health knowledge of school teachers.

Most of the respondents (54.3%) in the current study said that bacteria, sugar, and irregular tooth brushing these all are responsible for tooth decay while 7.9% and 9.9% of respondents marked only bacteria and only sugar being responsible for tooth decay, respectively. Around 17% of respondents marked sugar and bacteria both as dental caries causative factor. This shows respondents awareness about etiological factors of tooth decay. Similar results were reported by a study done in Pondicherry.^[9] Contradictory result was reported in a study done by Maganur *et al.*^[7] in Davangere where 23.3% of teachers ascertained eating sweets are responsible for causing tooth decay.

School teachers knowledge regarding causes and prevention of gum disease was found adequate as most of them of well aware about various causes and preventive measures of gum disease. They all marked one or the other causative factor and preventive measures as their answers. This result is in contrast with the study done in Davangere^[7] where only 14.7% of teachers marked irregular tooth brushing as a cause of gum disease.

When asked about their knowledge regarding daily frequency of tooth brushing in children, 64.9% said twice daily and 21.8% of respondents said that after each meal a child should brush his teeth. Around 91% (90.7%) of respondents do not know correct tooth brushing method for children and only 13.2% were aware of the amount of toothpaste, a child should apply on toothbrush is pea size. About half of the respondents (51.7%) said that they do not know exactly what amount of toothpaste should be applied on toothbrush. This clearly indicates lack of knowledge with respect to correct tooth brushing method for child and amount of toothpaste to be used.

Role of fluoride in preventing dental caries has been recognized and well documented.^[10] In our study, only 23.1% of school teachers are aware of dental caries preventive effect of fluoride and majority of them (57.6%) do not know fluorides role in caries prevention. Result of the current study shows inadequate knowledge of school teachers regarding dental caries preventive effect of fluorides. This was similar to a study done by Mota *et al.*^[11] However, in contrast to this, studies conducted in Pondicherry,^[9] Davangere,^[7] and South Africa^[12] showed adequate knowledge of school teachers with respect to caries preventive effect of fluoride as <50% of study participants in all three studies were well aware of the effect of fluoride in dental caries prevention.

Only 14.6% of respondents were aware of floss. This indicates that improvement in knowledge toward the use of dental floss is needed, as dental floss helps in removing plaque and other debris interdentially. Similar result was seen in the study conducted by Mota *et al.*^[11] where percentage of teachers using floss was very low. Contradictory result reported in a study done in Davangere^[7] where 46% of teachers were aware of flossing. Among all 98% of respondents had responded that oral health education is beneficial for the children. The result of the current study is in accordance with the studies done by Vanka *et al.*^[13] and Loupe Frazier.^[14]

Toothbrush and toothpaste were used by 72.2% of respondents which is lower than the studies conducted in Davangere,^[7] Pondicherry,^[9] and China.^[15] Around 56.3% of teachers brushed their teeth once daily while 25.8% did brushing twice daily. This was not in an agreement with the studies done in Davangere,^[7]

Pondicherry,^[9] and South Africa^[12] in which 66%, 82%, and >60% of study participants brushed their teeth twice daily. In the current study, disparity noticed between knowledge and practice of school teachers regarding tooth brushing frequency as 64.9% said that brushing should be done twice daily, but in reality, 25.8% did brushing twice daily. Brushing time of 55% of respondents was 5 min and only 24.5% gave correct answer which was 2–3 min.

It is best to use a soft-bristled toothbrush to brush our teeth.^[9] However, in our study, 38.4% used medium bristled brushes while 31.1% used soft-bristled brush. Only 7.9% changed their brushes every 3 months. Change of their toothbrush every 3 months is lower in our study as compared to a study by Sekhar *et al.*^[9] in which 56% of participants changed their brushes every 3 months. In our study, merely 11.3% of respondents changed their toothbrush when its bristles get frayed. Change of the toothbrush is indicated by not only the number of months used by the individual but also indicated by the fraying of the bristles. Fraying of the bristles reduces the cleaning efficiency of the toothbrush. Majority of respondents (86%) never visited to dentist. Only 4% visited dentist regularly and 9.9% had visited dentist for dental pain. The knowledge regarding dental problems being very poor relates to the percentage of the population visiting the dentist. As per the results 86% respondents never visited dentist, the reasons behind this could be dental diseases not considered life threatening, lack of time due to their busy schedule and cost of treatment is high.

CONCLUSION

In the present study, the overall knowledge of the school teachers regarding oral health was found inadequate. Their knowledge regarding causes of dental decay, gum disease, and its prevention was fair. However, their knowledge regarding correct brushing method, timing of tooth brushing, amount of toothpaste, use of dental floss, frequency of toothbrush change, and preventive effect of fluoride was found poor. Their practice toward maintenance of oral hygiene was also not commendable. Oral health education must be incorporated in syllabus of educational curriculum and teachers should be trained regularly by dental professional through various continuing dental education training programs. Regular dental camps at schools premises can also help in instilling knowledge among school teachers as they will be directed in touch with dentists during camps.

Camps can be combined with delivery of educational lectures, seminars, and interactive sessions between teachers and dental professionals on topic of oral health. Implementing such awareness activities surely will help in improving their knowledge and practice on oral health.

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