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Assessment of oral and dental health care awareness in school going children

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Abstract: The physical and psychological well-being of individuals are significantly influenced by their oral health, impacting growth, appearance, speech, chewing, taste, and socialization. Dental caries are a major public health issue, particularly among children and adolescents, with high prevalence rates reported. This study focused on the age group of 11-15 years from a Government high school, with a final sample size of 120 participants. Data were collected using a pre-designed and semi-structured questionnaire, which included components such as socio-demographic profile, an oral cavity examination, awareness about oral hygiene and dental caries, and the frequency of toothache. The study revealed that 29.1% and 19% of the participants had good and poor health of teeth, respectively, while 34.1% and 15.8% had good and poor gum health status. Toothache was reported as a frequent complaint by 28.3% of the participants, occasionally by 52.5%, rarely by 9.1%, and never by 10%. Pain or trouble with teeth was the reason for visiting a dentist for 26.6% of the participants, and 51.66% visited a dentist for follow-up treatment. Consumption of sugar-associated food items such as biscuits, cakes, cream cakes, sweet pies, etc. several times a day was reported by 71.6% of the participants. The study also found that the educational status of mothers was significantly associated with the dental and oral health of their children, with those having uneducated mothers having average and poor dental and oral health. Most of the participants had average gum and teeth health and cleaned their teeth only once a day. None of the participants visited a dentist for a routine check-up of teeth, and a substantial number of participants missed their activities due to toothache. In conclusion, this study highlights the importance of oral health in physical and psychological well-being and the need for awareness and education about oral hygiene and dental caries, particularly among children and adolescents. It also emphasizes the significance of regular dental check-ups and avoiding the consumption of sugar-associated food items to maintain good oral health.

Keywords: Oral and dental health care; Awareness; School going children.

1. Introduction

The health of a child is influenced by a combination of factors, including their family's culture, beliefs and knowledge, social environment, and physical conditions. Dental caries and periodontal disorders are major global health issues, affecting a large portion of school-going children in Asian countries. To alleviate the global burden of oral diseases, the World Health Organization (WHO) suggests promoting oral health at the school level to cultivate knowledge, attitudes, and behaviors related to oral health issues [1–3].

Oral health is a crucial component of overall health and quality of life, as the condition of the oral cavity reflects general health. It has a significant impact on physical and psychological well-being, affecting growth, appearance, speech, chewing, taste, and socialization. Oral health is a state of being free from chronic oral and

facial pain, oral and throat cancer, oral sores, birth defects such as cleft lip and palate, periodontal disease, tooth decay and loss, and other oral cavity disorders. Oral diseases are major public health problems due to their high prevalence and incidence globally, with dental caries and periodontal diseases being the most widespread. Risk factors for oral diseases include tobacco and alcohol use, an unhealthy diet, poor oral hygiene, and social determinants [4–7].

In developing countries like India, oral health is often neglected by the majority of the population, and there are challenges in meeting oral health needs. Dental caries is a significant public health issue, especially among children and adolescents, with high prevalence rates reported in National Health Surveys conducted in India in 2004 [2]. Dental caries is a progressive, irreversible microbial disease with multifactorial causes that not only cause pain and discomfort but also place a financial burden on parents. Oral diseases also restrict activities at school, work, and home, causing millions of lost school and work hours worldwide. Preventing dental caries has long been considered an important task for the healthcare profession [8].

Oral diseases such as dental caries, gingivitis, and bad breath are still significant dental healthcare concerns, especially in children in developing countries. Preventing dental caries has been a challenge for the dental health profession for many decades, with scientific research continually making progress in identifying best practices for diagnosis, treatment, and prevention. Newer strategies that emphasize caries prevention and conservation of tooth structure are replacing traditional surgical approaches to treating carious lesions. Understanding the level of oral health knowledge can assist oral health agencies in developing oral health policies to prevent dental problems at an early stage. Collected information provides data for future research and can be used to compare children's oral health attitudes in different schools or states [9,10].

Good oral health practice consists of the continuous implementation of two sets of behaviors: utilizing dental services (regular dental checkups, oral health promotion, and professionally applied preventive means) and self-care habits (good oral hygiene, restriction of sugar intake, and application of fluoride products). Oral health education must begin with raising awareness among growing children, who require proper guidance for healthy growth, upkeep, and hygiene of their teeth. A common misconception that milk teeth will naturally fall out may lead to various dental problems such as malocclusions, dental caries, and periodontal issues [11].

2. Materials and Methods

2.1. Study Design

This was a cross-sectional study.

2.2. Sampling Method and Sample Size

Simple random sampling was used to select one class, and all students in the selected class were enrolled in the study using the complete enumeration method. The final sample size was 120.

2.3. Study Duration

The study was conducted over a period of 3 months.

2.4. Study Participants

The study included participants in the age group of 11-15 years from a government high school.

2.5. Inclusion Criteria

All students who consented to participate in the study were included.

2.6. Exclusion Criteria

Participants who were undergoing dental treatment for any other purpose were excluded.

2.7. Ethics and Approval

Permission was obtained from the school principal and parents of the children. Data collection and examination were planned on a monthly parents-teacher meeting day for feasibility. Written informed consent was obtained from all parents of the students, and information obtained was kept confidential.

2.8. Study Tool [12]

A pre-designed and semi-structured questionnaire was used to collect data, which included the following components:

- Socio-demographic profile of the participants, including age, education, address, parental education, total family income, etc.
- Oral cavity examination to determine any morbidities.
- Questions related to awareness about oral hygiene, dental caries, etc.

2.9. Data Analysis

Data collected were entered into a pre-structured data entry form on Microsoft Excel, and descriptive and analytical statistics were presented as required using SPSS statistical software.

3. Results

Table 1 presents the health status of teeth and gums of the study participants. About 35 (29.1%) and 23 (19%) study participants had good and poor teeth health, while 41 (34.1%) and 19 (15.8%) had good and poor gum health. The frequency of teeth cleaning among the study participants was also examined. A maximum of 112 (93.3%) participants cleaned their teeth daily, while 5 (4.16%) cleaned their teeth 2 or more times a day, and 2 (1.66%) cleaned their teeth only 2-3 times a week.

Regarding the frequency of toothache, 34 (28.3%) participants reported toothache as a frequent complaint, 63 (52.5%) reported occasional toothache, while 11 (9.1%) suffered from toothache rarely, and 12 (10%) participants had never experienced toothache.

Table 3 displays the practice of visiting the dentist during the past 12 months. 34 (28.3%) had never visited a dentist, 28 (23.3%) had visited a dentist four or more times, while 14 (11.6%) visited a dentist only once during the last year. None of the participants visited a dentist for routine checkup of teeth. 62 (51.66%) visited a dentist for follow-up treatment, and pain or trouble with teeth was the reason for visiting a dentist for 32 (26.6%) participants.

Table 2 presents the problems faced during the past year by the study participants in various domains. 12 (10%) study participants were not satisfied with the appearance of their teeth, 14 (11.6%) responded that they often avoid smiling and laughing due to their teeth, 23 (19.1%) had to miss activities due to toothache, 34 (28.33%) reported difficulty in biting hard foods, and 43 (35.83%) had difficulty in chewing.

Table 4 shows information regarding the consumption of sugar, sugar products, and tobacco in study participants as reported by their parents. 86 (71.6%) participants reported that they consumed biscuits, cakes, cream cakes, sweet pies, etc. several times a day. Lemonade, Coca-Cola, or other soft drinks were mostly consumed once a week, while only 18 (15%) participants were consuming fresh fruits daily. 43 (35.8%) consumed chewing gum containing sugar several times a week. 78 (65%) reportedly consumed sweets/candy several times a week. 46 (38.3%) consumed milk with sugar daily, while 54 (45%) and 46 (38.3%) reported that they never take tea and coffee, respectively. None of the participants had ever consumed tobacco.

Table 5 shows the association of the health of teeth and gums of children with parental education (mother and father). It was observed that both were not significantly associated with the father's education (p-value 0.156 and 0.728, respectively) but were significantly associated (p-value < 0.001) with mothers' educational status. Children with average and poor dental and oral health mostly had uneducated mothers.

Table 1. Description of health status of teeth & gums of study participants

Parameter	n (%)
Health of teeth	
Good	35 (29.1)
Average	62 (51.6)
Poor	23 (19.1)
Gums	
Good	41 (34.1)
Average	60 (50)
Poor	19 (15.8)
Cleaning teeth	
2-3 times in a week	02 (1.66)
Once a day	112 (93.3)
2 or more times in a day	05 (4.16)
Toothache	
Often	34 (28.3)
Occasionally	63 (52.5)
Rarely	11 (9.1)
Never	12 (10)

Table 2. Problem faced during the past year in study participants

Problems	n (%)
Not satisfied with the appearance of teeth	
Yes	12 (10)
No	85 (70.8)
Do not know	23(19.16)
Often avoid smiling and laughing due to teeth	
Yes	14 (11.6)
No	99 (82.5)
Do not know	07 (5.8)
Toothache or discomfort caused to miss activities	
Yes	23 (19.1)
No	94 (78.3)
Do not know	03 (2.5)
Difficulty in biting hard foods	
Yes	34 (28.33)
No	81 (67.5)
Do not know	05 (4.16)
Difficulty in chewing	
Yes	43(35.83)
No	11 (9.1)
Do not know	05 (4.16)

Table 3. Practice of visiting dentist during the past 12 months in study participants

	n (%)
Once	14 (11.6)
Twice	23 (19.1)
Three times	11 (9.1)
Four times	28 (23.3)
>4 times	10 (8.3)
No visit	34 (28.3)
Reason for visit	
Pain or trouble with teeth	32 (26.6)
Treatment/follow-up of treatment	62 (51.66)
Routine checkup of teeth	00 (00)
Do not know	00 (00)

Table 4. Consumption of sugar, sugar products, and tobacco amongst study participants

Frequency	Biscuits, cakes, cream cakes, sweet pies, etc.	Lemonade, coca cola, or other soft drinks	Fresh fruits	Chewing gum containing sugar	Sweets/candy	Milk with sugar	Tea with sugar	Coffee with sugar	Tobacco
Never	4 (3.3)	12 (10)	18 (15)	42 (35)	2 (1.6)	08(6.6)	54(45)	46 (38.3)	120 (100)
Once a week	2 (1.6)	45 (37.5)	34 (28.3)	20 (16.6)	7 (5.8)	12 (10)	12 (10)	00	00
Several times a week	18 (15)	37 (30.8)	35 (29.1)	43 (35.8)	78 (65)	40 (33.3)	30 (25)	27 (22.5)	00
Every day	10 (8.3)	20 (16.6)	13 (10.8)	12 (10)	13 (10.8)	46 (38.3)	12 (10)	40 (33.3)	00
Several times a day	86 (71.6)	06 (5)	20 (16.6)	3 (2.5)	20 (16.6)	14 (11.6)	12 (10)	7 (5.8)	00

Table 5. Association of health of teeth and gum with education of parents

Health of teeth and gum	Education of parents					
	Father			Mother		
	Uneducated (n=17), n (%)	Educated (n=103), n (%)	P	Uneducated (n=46), n (%)	Educated (n=74), n (%)	P
Health of teeth						
Good	5 (29.4)	30 (29.12)	0.156	5 (10.8)	30 (40.5)	<0.001
Average	6 (35.2)	56 (54.36)		21 (45.6)	41 (55.4)	
Poor	6 (35.2)	17 (16.5)		20 (43.4)	03 (4.05)	
Gums						
Good	7 (41.1)	34 (33)	0.728	08 (17.3)	33 (44.59)	<0.001
Average	7 (41.1)	53 (51.45)		21 (45.65)	39 (52.7)	
Poor	3 (17.6)	16 (15.53)		17 (36.95)	2 (2.7)	

4. Discussion

The awareness of parents regarding oral health practices creates a preventive barrier, thus promoting and establishing sound oral health status of a child [13]. In the present study, we observed that the educational level of parents had a major impact on the child's oral health. This is in concurrence with the findings in the literature [14–16]. In the present sample population, good oral health was observed in children with educated parents, while toothache was a common finding in cases of uneducated parents. The reason postulated behind this was economic restraints, limited availability of information, and limited access to healthcare professionals [15]. Routine dental checkups without any dental complaints in the child were also observed to be absent in both educated and uneducated parents.

The preventive measures for dental caries are assessed by monitoring the frequency of tooth brushing and the type of toothpaste used. In the present study, the frequency of brushing/cleaning teeth twice daily was observed only in the children of educated parents and only in 4% of the study population. This value is much lower than reported by Mathur and Gupta (35.8%) and Costa *et al.* (68%) [17,18]. In cases of uneducated parents, none of the children reported brushing twice daily. This contradicts the brushing statement given by the American Dental Association "Two minutes, twice a day," which was advocated to maintain good oral hygiene. Vallejos-S'anchez *et al.* [19] have suggested that children's frequency to brush teeth is directly linked to the educational level of their parents. This is in agreement with the findings of the present study. Razmiene *et al.* [20] observed that the incidence of dental caries is influenced by the frequency of tooth brushing. In the present study, the children of uneducated parents were observed in the habit of irregular brushing, so they are more prone to toothache and visit the dentist more frequently for toothache problems.

However, our preventive measures should not be merely restricted to oral health care and oral hygiene practices for an individual. In the present study, we observed an increase in daily intake of sugar in the form of cakes, creams, sweets, and candy by the children compared to fruits in the majority of the study population. This increase in the frequency of intake of carbohydrates can be accounted for two reasons: first, they are easily accessible to the mass population in the form of processed food, and children are driven toward them through their colorful appearance and advertisements [19]. Another reason for excessive intake of sugar items and processed food could be the working conditions of the parents. If both parents are working, children are mainly dependent on packed food, which is easy to cook and takes less time. Children, during their leisure time, eat sweets/sugary food to compensate for food [20].

The knowledge of the population is necessary to develop and restructure the educational program for children at the school level. Prevention first starts from home and family, so it is of prime importance to evaluate and assess the cultural beliefs, dietary habits, and awareness of parents or guardians regarding oral health procedures before implementing the program. Therefore, a tailored educational program would increase the knowledge and awareness of parents and would be an adjunct in shaping the values and behavior in children.

The limitations of the present study were as follows: questions were restricted to parents so under-reporting could not be ignored, especially in the cases of uneducated parents. Furthermore, the present study discussed the retrospective dental status of the child, so memory bias could be a confounding variable affecting the results of the study. More longitudinal studies should be conducted at the school level with a larger sample size to include parents too, as parents play a key role in transferring information and beliefs to the healthy behavior practices of the child. Training parents along with children at the school level will help to establish more effective preventive measures, reducing the cost burden of complex dental treatment.

5. Conclusion

Most of the participants had average gum and teeth health. None of the participants visited a dentist for routine check-up of teeth. Most participants cleaned their teeth only once a day. The maximum number of participants consumed sugar-associated food items daily or several times a week. A substantial number of study participants missed their activities due to toothache.

6. Limitations

The study is a cross-sectional study, so the details regarding the awareness levels pertaining to behavioral dynamics cannot be studied and require in-depth qualitative research. The sample size is arbitrary based on

feasibility using the complete enumeration method, so the power of the study is limited. The study being conducted in a single school, the study findings cannot be generalized to other settings, hence reducing the external validity of findings.

7. Recommendations

Reinforced measures for oral health awareness, including IEC and BCC sessions, inclusive of parents and teachers, are recommended. Parental control of dietary habits is recommended to regulate sweet foodstuff intake. In-depth qualitative research should be conducted to find out the behavioral response to the issue among stakeholders.

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References

[1] Mishra, A., Pandey, R. K., Chopra, H., & Arora, V. (2018). Oral Health awareness in school-going children and its significance to parent's education level. *Journal of Indian Society of Pedodontics and Preventive Dentistry, 36*(2), 120-124.

[2] Shireen, N., & Ranganath, T. S. (2016). Assessment of oral health hygiene among high school girls of Bengaluru city, India. *International Journal of Community Medicine and Public Health, 3*(8), 2335-2339.

[3] Mhaske, S., Yuwanati, M. B., Keswani, H., & Jain, L. (2018). Evaluation of oral health awareness among public school children-A school-based study from Bhopal. *Archives of Medicine and Health Sciences, 6*(2), 214-219.

[4] Al-Qahtani, S. M., Razak, P. A., & Khan, S. D. (2020). Knowledge and practice of preventive measures for Oral Health care among male intermediate schoolchildren in Abha, Saudi Arabia. *International Journal of Environmental Research and Public Health, 17*(3), 703.

[5] Kaur, B. (2009). Evaluation of oral health awareness in parents of preschool children. *Indian Journal of Dental Research, 20*(4), 463-465.

[6] Elzahaf, R. A., Elzer, A. S., & Edwebi, S. (2019). Oral Health practices, knowledge, and attitudes among primary schoolchildren in Derna City, Libya: A cross-sectional survey. *International Journal of Pedodontology and Rehabilitation, 4*(2), 41-49.

[7] Amarlal, D., Devdas, K., Priya, M., & Venkatachalapathy, A. (2013). Oral Health attitudes, knowledge and practice among school children in Chennai, India. *Journal of Education and Ethics in Dentistry, 3*(1), 26-33.

[8] Ganesh, A., Chaly, P. E., Reddy, V. C., Ingle, N. A., & Bhavyaa, R. (2019). Oral Health awareness and oral hygiene status of 12-and 15-year-old children in Chennai. *Journal of Indian Association of Public Health Dentistry, 17*(3), 206-212.

[9] Harikiran, A. G., Pallavi, S. K., Hariprakash, S., Ashutosh, & Nagesh, K. S. (2008). Oral Health-related KAP among 11- to 12-year-old school children in a government-aided missionary school of Bangalore city. *Indian Journal of Dental Research, 19*(3), 236-242.

[10] Mahesh Kumar, P. M., Joseph, T., Varma, R. B., & Jayanthi, M. (2005). Oral health status of 5 years and 12 years school going children in Chennai city - An epidemiological study. *Journal of Indian Society of Pedodontics and Preventive Dentistry, 23*(1), 17-22.

[11] Das, U. M., Beena, J. P., & Azher, U. (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 and Preventive Dentistry, 27*(1), 6-8.

[12] Saud, E. N., Awal, A., Parvin, A., Zaman, S., & Akbar, T. (2016). Study on oral hygiene: Awareness and practices among the school going children in Rajshahi division. *Research Review Journal of Dental Sciences, 4*, 41-47.

[13] Okada, M., Kawamura, M., Kaihara, Y., Matsuzaki, Y., Kuwahara, S., Ishidori, H., ... & Ekuni, D. (2002). Influence of parents' oral health behavior on oral health status of their school children: An exploratory study employing a causal modeling technique. *International Journal of Paediatric Dentistry, 12*(2), 101-108.

[14] Isong, I. A., Zuckerman, K. E., Rao, S. R., Kuhlthau, K. A., Winickoff, J. P., & Perrin, J. M. (2010). Association between parents' and children's use of oral health services. *Pediatrics, 125*(3), 502-508.

[15] Van den Branden, S., Van den Broucke, S., Leroy, R., Declerck, D., & Hoppenbrouwers, K. (2012). Effects of time and socio-economic status on the determinants of oral health-related behaviors of parents of preschool children. *European Journal of Oral Sciences, 120*(2), 153-160.

[16] Camargo, M. B., Barros, A. J., Frazao, P., Matijasevich, A., Santos, I. S., Peres, M. A., ... & Demarco, F. F. (2012). Predictors of dental visits for routine check-ups and for the resolution of problems among preschool children. *Revista de Saúde Pública, 46*(1), 87-97.

[17] Mathur, A., & Gupta, T. (2011). Oral health attitude knowledge behavior and consent towards dental treatment among school children. *Journal of Orofacial Research, 1*, 6-10.

[18] Costa, C., Pereira, M., Passadouro, R., & Spencer, B. (2008). Children's oral hygiene: Healthy mouth, families supervise? *Acta Medica Portuguesa, 21*(5), 467-474.

[19] Vallejos-Sánchez, A. A., Medina-Solıs, C. E., Maupomé, G., Casanova-Rosado, J. F., Minaya-Sánchez, M., Villalobos-Rodelo, J. J., ... & Escoffié-Ramırez, M. (2008). Sociobehavioral factors influencing toothbrushing frequency among schoolchildren. *Journal of the American Dental Association, 139*(6), 743-749.

[20] Razmiene, J., Vanagas, G., Bendoraitiene, E., & Vysniauskaite, A. (2011). The relation between oral hygiene skills and the prevalence of dental caries among 4-6-year-old children. *Stomatologija, 13*(2), 62-67.