

Barriers and Facilitators for the Implementation of School Oral Health Programs Amongst Schools with Different Education Boards: A Comparative Study

Received: 18 February 2023, **Revised:** 26 March 2023, **Accepted:** 28 April 2023

Disha Makwani

Senior lecturer, Department of Pediatric and Preventive Dentistry, Karnavati School of Dentistry, Karnavati University, Gandhinagar, Gujarat, India.

Aakanxa Thakkar

Postgraduate Student, Department of Pediatric and Preventive Dentistry, Karnavati School of Dentistry, Karnavati University, Gandhinagar, Gujarat, India.

Rohan Bhatt

Professor, Department of Pediatric and Preventive Dentistry, Karnavati School of Dentistry, Karnavati University, Gandhinagar, Gujarat, India.

Megha Patel

Professor and Head, Department of Pediatric and Preventive Dentistry, Karnavati School of Dentistry, Karnavati University, Gandhinagar, Gujarat, India.

Foram Patel

Senior lecturer, Department of Pediatric and Preventive Dentistry, Karnavati School of Dentistry, Karnavati University, Gandhinagar, Gujarat, India.

Chhaya Patel

Reader, Department of Pediatric and Preventive Dentistry, Karnavati School of Dentistry, Karnavati University, Gandhinagar, Gujarat, India.

Corresponding Author: Dr. Aakanxa Thakkar

Email: akkuthakkar1707@gmail.com

Keywords

School oral health programs, Dental health surveys, Teacher, Barriers, School children, Education boards

Abstract

BACKGROUND –The school board actively encourages a coordinated strategy that differs between various educational boards to improve academic and health results among students, their parents and school staff thereby influencing the larger community.

AIM - To assess the barriers and facilitators for implementing oral health programmes among school children of different educational boards.

METHOD - A questionnaire with 13 closed-ended questions on barriers and facilitators for school-based oral health programs was validated and distributed to school teachers in Gandhinagar, Gujarat, India, Total 94 responses were collected and converted into numerical data to calculate counts and percentages. Data were analysed using SPSS version 20.0 software.

CONCLUSION – Good oral health is key to general wellbeing and schools being the most influencing in foundation years of children, school based oral health program should be implemented on regular basis and provisions should be made to accommodate it in regular curriculum

RESULTS - The demographic distribution showed the highest participants from the GSEB board (43.6%) and the least responses from the CBSE board (21.3%). All participants were aware of school-based oral health programmes; however, only 70% of the CBSE schools had implemented school based oral health programmes, compared to 100% of ICSE and GSEB schools. In the GSEB board, the main barrier to implement school based oral health programmes in the curriculum was lack of material to

Journal of Coastal Life Medicine

teach oral health problems (42.9%), whereas in the CBSE board, insufficient time available in weekly schedules was the main limiting factor (63.6%). ($P < 0.005$)

1. Introduction

Oral diseases are a major public health concern, particularly among children and adolescents. Caries affected 60-90% of schoolchildren worldwide, with over 531 million children suffering from deciduous tooth caries.¹ The quality of life can be significantly impacted by oral disorders, which can also cause discomfort, oral function limitations, reduced nutrition, emotional stress, low self-esteem, and poor attendance and performance in school.²

School Health Promotion is a global need, with programmes being implemented across continents due to the numerous documented benefits to not only individuals, but also to communities and countries as a whole.³ One attempt being made to improve the oral health of children and adolescents is the implementation of school-based oral health promotion activities (SBOHP), as recommended by the World Health Organisation (WHO).^{4,5} Furthermore, school years cover the developmental stages of childhood and adolescence, when individuals form enduring sustainable health behaviours, values, and convictions.⁴

Understanding the enablers and challenges of programme implementation is critical for optimising programme benefits, ensuring sustainability.⁶ The success of implementing and maintaining these activities in schools is significantly influenced by school-related factors, including teachers' perceptions of their roles in health education and the efficacy of their interventions, as well as the support and resources provided by school authorities for these activities.⁷ In addition to these barriers, some facilitators also exist, including school dedication, staff support for enhancing children's health⁸, peer influence⁹ and programmes like The Parents for Healthy School Framework by the CDC¹⁰.

School board has a decisive role in public education policy and school system administration as well as it has considerable influence over educational decisions and provides a key social and political connection to the schooling process.¹¹ Thus, there are differences amongst educational boards in terms of educational policy and academic curriculum.

However, at the national/state and dental institute levels, efforts are being made towards oral health education and promotion, prevention, and dental check-up/treatment camps. The initiatives for school oral health promotion in India like Indian Dental Association - Colgate's "Young India" Bright Smiles, Bright Futures, Chacha Nehru Sehat Yojna - School health scheme (Government of Delhi), Neev - SOHP, etc. appear to be in their early phases.¹² Therefore this study was aimed at evaluating barriers and facilitators encountered by various educational boards in the implementation of school-based oral health programmes in Gandhinagar city, Gujarat, India.

The null hypothesis proposed was that there was no significant difference between barriers and facilitators encountered by various educational boards in the implementation of school-based oral health programmes.

2. Methodology:

Study setting and ethical clearance: This descriptive, comparative questionnaire-based study was conducted in Gandhinagar city, Gujarat, India. After getting approval from the ethical committee of the institution, a validated, self-administered, close-ended questionnaire was formulated comprising of total 13 questions to assess the factors for implementing oral health programmes among school children of three different educational boards namely Indian Certificate of Secondary Education (ICSE), Central Board of Secondary Education (CBSE) and Gujarat Secondary and Higher Secondary Education Board (GSEB).

Study population and sample: For each educational board, a simple random lobby approach was used to select three different schools. A total of 126 participants, including 42 participants from each educational board were selected. Among them, after two gentle reminders 33 responded from ICSE board, 20 responded from CBSE board and 41 responded from GSEB board.

Study Instrument: The survey was divided into three sections. Demographic information was collected in the first part, including name, school name, and kind of educational board. Section 2 had seven questions, the

Journal of Coastal Life Medicine

first three of which were general questions about how often school-based oral health programmes were conducted. The remaining questions were about facilitators. The final section collected information about barriers and possible solutions to bridge the gap. The included questions were closed-ended with either yes/no or multiple-choice responses, making them distinct and simple to answer.

STATISTICAL ANALYSIS:

The responses for each item in the questionnaire were in the form of Categorical data which were converted into numerical data to calculate counts and percentages for statistical analysis. Non-Parametric Chi square test was used to do analysis of the obtained data. The entire data was statistically analysed using Statistical Package for Social Sciences (SPSS version 20.0, IBM Corporation, USA) for MS Windows. The confidence interval determined was 95% and Statistical significance value was accepted at $P < 0.05$ to determine significance of various responses.

3. Results

In this physical survey, the demographic distribution shows that the highest responses were from the GSEB board (43.6%), followed by the ICSE board (35.1%), and the least responses were from the CBSE board (21.3%). (Table-1).

Awareness, implication and frequency of SBOHP among study participants

All participants were aware of school-based oral health programmes; however, only 70% of respondents from CBSE schools confirmed that they had implemented SBOHP, compared to 100% affirmation given by respondents of ICSE and GSEB schools. Among the participants, all 100% from ICSE board, 45% from CBSE board, and 26.8% from GSEB board reported that frequency of SBOHP was once a year. (Table-2, Graph-1)

Facilitators for school oral health programs. (Table-3, Graph-2)

ICSE board

Participants (66.7%) confirmed that basic screening surveys were conducted most frequently, followed by school-based fluoride application programs and no tooth brushing or mouth rinsing programs were

undertaken in their schools. Dental institute cooperation (42.4%) and supplementary financing sources (21.2%) were the two main facilitators for successfully implementing SBOHP. Parents gave consent as most parents (48.5%) in ICSE board understand importance of SBOHPs. The 2nd most important factor for parental agreement in ICSE board schools was the strict implication of infection control procedures during SBOHP at these schools (30.3%).

CBSE board

Respondents stated that highest-conducted SBOHP was basic screen surveys (55.6%), followed by tooth brushing and/or mouth rinsing programs (44.4%). Factors that facilitated SBOHPs were supportive funding resources by a school administration as well as availability of infrastructure to organize an oral health camp. In accordance with ICSE board, parental agreement for SBOHP was greatly influenced by parents' increased understanding of the value of SBOHP (33.3%) and the strict implication of infection control procedures at schools (22.2%).

GSEB board

In GSEB board, basic screen surveys were the most frequently conducted SBOHP (59.3%) which was similar to results in CBSE and ICSE boards, followed by tooth brushing and/or mouth rinsing programmes (40.7%). Similar to the ICSE board, the major facilitating variables were dental institute cooperation, supplemental financing resources and active participation of teachers. In contrast to CBSE and ICSE board, rather than understanding the importance of SBOHPs, the transparency on the part of school administration (44.4%) encouraged the parents to give consent for these programs

Barriers (Table-4, Graph-3)

As 100% respondents agreed that the SBOHPs were conducted in ICSE board schools, no barriers were reported in this group.

Among the CBSE and GSEB schools, the major reason for failure was lack of fundings in these schools. When the reason for unwillingness of dentist to conduct the SBOHPs was asked, majority of respondents (72.7%) in CBSE board schools stated that it was due to a smaller number of interested students whereas majority

Journal of Coastal Life Medicine

participants (71.4%) from GSEB schools stated that dentist refused due to lack of resources in their schools.

The major reason for failure of incorporation of SBOHPs in the curriculum of the students, was lack of time available in weekly schedule for CBSE board (63.6%) whereas the GSEB school teachers stated that lack of resources to teach oral education was a limiting factor (42.9%).

Regarding the barriers in restarting the SBPOHPs after the COVID-19 pandemic, significant differences were

seen in the responses of respondents between CBSE and GSEB schools (p value=0.0015). In CBSE schools, the threat to infection from COVID-19 proved to be a major barrier (45.5%) whereas in the GSEB schools the preference for virtual learning shown by schools as well as the parents of the respondents acted as a major barrier (42.9%).

Both CBSE and GSEB schools agreed to reinstate the SBOHPs if the barriers got resolved and there were no statistically significant differences among the responses of the respondents.

TABLE:1 Demographic profile of study participants

Educational Board	No. of Participants	Percentage
ICSE	33	35.1
CBSE	20	21.3
GSEB	41	43.6

TABLE: 2 Awareness and frequency of SBOHP in Gandhinagar, Gujarat.

Question	Response	ICSE (33)	(%)	CBSE (20)	(%)	GSEB (41)	(%)	P value
Are you aware about the school-based oral health programs and its importance for children	Yes	33 ICSE (1)- 9 ICSE (2)-11 ICSE (3)- 13	100	20 CBSE (1)- 9 CBSE (2)- 5 CBSE (3)- 6	100	41 GSEB (1)-16 GSEB (2)-11 GSEB (3)-14	100	---
	No	0		0		0		
Have you conducted any school-based oral health programs in your school?	Yes	33 ICSE (1)- 9 ICSE (2)- 11 ICSE (3)- 13	100	14 CBSE (1)- 9 CBSE (2)- 5	70	41 GSEB (1)-16 GSEB (2)-11 GSEB (3)-14	100	0.0012
	No	0		6 CBSE (3)- 6	30	0		

Journal of Coastal Life Medicine

How many times a year do you have school-based oral health programmes at your school?	Once a year	33 ICSE (1)- 9 ICSE (2)- 11 ICSE (3)- 13	100	9 CBSE (1)- 9	45	11 GSEB (2)-11	26.8	0
	Twice a year	0		0		16 GSEB (1)-16	39	
	Not conducted on regular basis	0		11 CBSE (2)- 5 CBSE (3)- 6	55	14 GSEB (3)-14	34.1	

TABLE: 3 Facilitators for implementing SBOHP amongst different educational boards.

Question	Response	ICSE (33)	(%)	CBSE (9)	(%)	GSEB (27)	(%)	P value
Which of following school-based oral health programs have been conducted in your school?	Basic screening surveys	22	66.7	5	55.6	16	59.3	0.0051
	School-based fluoride application programs	11	33.3	0		0		
	Tooth-brushing &/or mouth-rinsing programs	0		4	44.4	11	40.7	
What prompted your school to establish oral health initiatives at the school?	Supportive funding resources	7	21.2	3	33.3	6	22.2	0.2563
	Support from school administration	5	15.2	2	22.2	4	14.8	
	Co-operation from dental institutes	14	42.4	1	11.1	10	37	
	Availability of infrastructure to organize oral health camp	3	9	2	22.2	2	7.4	
	Active participation of teachers	4	12.1	1	11.1	5	18.5	
What have encouraged	Appreciating the significance of school-	16	48.5	4	44.4	6	22.2	0.0000

Journal of Coastal Life Medicine

parents to give their consent for school-based oral health programmes?	based oral health preventive programmes						
	Transparency on the part of school administration	7	21.2	1	11.1	12	44.4
	Strict implication of infection prevention and control protocols by school	10	30.3	4	44.4	9	33.3

TABLE: 4 Barriers for implementing SBOHP amongst different educational boards.

Question	Response	CBSE (11)	(%)	GSEB (14)	(%)	P value
Have you ever planned to conduct school-based oral health programmes but it was unsuccessful?	Yes	11	100	14	100	---
	No	0		0		
What were the reasons for its failure?	Lack of funding	8	72.4	5	35.7	0.3051
	Unable to get consent from parents	1	9.1	2	14.3	
	Unable to get support from higher authorities at local or district level	1	9.1	4	28.6	
	Unavailability of dental resources	1	9.1	3	21.4	
What were the reasons for unwillingness of dentist?	Lack of funding and resources by school administration	3	27.3	10	71.4	0.0661
	Very few interested participants	8	72.7	4	28.6	
What are the barriers in implicating oral health education in curriculum for school children?	Lack of material to teach oral health problems	2	18.2	6	42.9	0.3716
	No time available in weekly schedules	4	63.6	5	35.7	
	Ignorance of oral health importance by school staff	2	18.2	3	21.4	

Journal of Coastal Life Medicine

What were the barriers to restart school-based oral health programmes after COVID-19 pandemic?	Threat of COVID-19 spread	5	45.5	3	21.4	0.0015
	Virtual learning preference of school & parents	4	36.4	6	42.9	
	Unwillingness of staff	0		0		
	Unwillingness of parent	0		0		
	Constant changes in school policies at district, state and national levels due to pandemic	2	18.2	4	28.6	
	Prohibited opening of school by governmental policies	0		1	7.1	
Would you be interested to reorganize school-based oral health programmes, if barriers get resolved?	Yes	11	100	14	100	---
	No	0		0		
What can be possible solution to breach the barriers of school-based oral health programmes?	Support and promotion by state and territorial oral health programmes	1	9.1	4	28.6	0.0948
	Organization of state government funded oral health programmes regularly	1	9.1	3	21.4	
	Proper implication of infection control protocols at school	4	36.4	2	14.3	
	Spread awareness about importance of oral health among population	1	9.1	3	21.4	
	Compulsory alliance with dental institute or personnel	4	36.4	2	14.3	

4. Discussion

This is the first survey-based study to assess facilitators and barriers to the implementation of school-based oral health programmes among various educational boards of Gandhinagar city, Gujarat. Schools are excellent

places to spread the word about oral health. The majority of a person's youth and adolescence is spent in a classroom. This is a critical stage in a person's life when behavioural patterns are formed that may indicate their future health status. Furthermore, at this age, children can learn new information quickly. The earlier

Journal of Coastal Life Medicine

habits are formed, the greater the impact.⁴ The development of a healthy school environment may be facilitated through oral health promotion, in addition to assisting children in developing personal skills to choose a healthy lifestyle.¹³ Oral health interventions in schools with diverse levels of influence may serve to advance oral health equity.⁵

The school board plays a vital role in planning academic and co-curricular activities that shape the overall development of an individual. The goals and vision differ for each education board which influences the strategies to improve academic and health results among school staff, students, families, and the larger community.¹⁴ As a result, this study was conducted amongst different educational boards.

Due to their ease of application, basic screening surveys were the most popular type of SBOHP. Parental awareness regarding oral health is inevitable as family environment has a significant influence on children's oral health.¹⁵ Teachers claim that they need adequate tools that give students easy-to-understand information that is precise and straightforward. Teachers in North Carolina and Tanzania reported similar perceptions of this barrier to teaching oral health topics.^{16,17} Health education materials are acknowledged to be crucial tools for raising the standard of the educational process, enhancing, and expanding the verbal information provided by teachers and dental professionals.¹⁸ Hence, it is crucial that written materials intended for primary school students use language appropriate for their reading ability while presenting the best available scientific information. The content should be entertaining and instructive in order to encourage the youngster to understand the health-related concepts and attitudes.¹⁹

The most popular source of trustworthy information on oral health that primary school teachers utilise when creating oral health activities with their students is school textbooks²⁰, yet various educational boards have different textbooks, which results in inequality. The GSEB board, however, has recently begun to adhere to the NCERT syllabus, resulting in a similarity between the two boards that is evident in both barriers and facilitators.

The decisions made by governments and other policymakers about what is prioritised in regard to a young person's education and societal demands have

always had an impact on the school curricula. There was a tendency in some instances to "produce" through education young people who were more suited to meet the needs of the nation's economy.²¹ Health promotion initiatives like school-based oral health programmes cannot receive the attention and time they require due to the growing emphasis on academics and the time invested in that. Moreover, schools have a limited set of resources that may not be sufficient to meet all of the requirements needed to promote health. In order to achieve this goal, the role and contributions of healthcare professionals, the health sector, and public health institutions are vital.³

Prior to administering the SBOHP, it was crucial to obtain parental consent for evaluation and therapy. In this regard, the teachers played a vital role in assisting the dental personnel, as they were in direct contact with parents. The deployment of SBOHP would be disrupted if consent was not obtained. This is in line with a study conducted in London, where the authors reported that despite the Dental Public Health team's best efforts, some schools had trouble getting consent forms back.²¹

Financial support is another extremely important factor in the implementation of an oral health programme. Children with untreated early childhood caries (ECC) are more likely to live in areas with lower healthcare expenditure per capita than children with treated ECC. It demonstrates that optimal financial support should be allocated to treat dental diseases.²² Furthermore budget restrictions made it challenging for the dentist to provide current oral health promotional materials, and it also lowered their enthusiasm to carry out school-based preventative programmes.²³

COVID-19 has disrupted K-12 education and limited children's access to oral health services and programmes. School-based oral health programmes provide an essential portal of entry for children to receive preventive oral health services. It has also instilled the threat of its spread, along with a number of other factors such as schools using remote or virtual learning, staff and parents not being prepared, constant policy changes at the school district level, and local policy changes that were barriers to the restart of SBOHPs.²⁴

It is highlighted that the construction of a favourable environment for the development of initiatives to

Journal of Coastal Life Medicine

promote oral health is significantly influenced by the socioeconomic and cultural context of the family, school, and community. Hence, when organising, implementing, and assessing the success of oral health education in schools, it is crucial to take into account the context in which these activities are established.¹⁹

Limitation of the study:

- To investigate the relationship between oral health in students and the implementation of school-based oral health programs was not within the scope of our study.
- Only nine schools were chosen randomly from a total of 37 government and 44 private schools in Gandhinagar city for the study; therefore, another multicentre study compassing more numbers of schools is required to obtain more precise data.

5. Conclusion

- There is a significant difference in the facilitators & barriers faced by different educational boards in implementing regular school-based oral health programs, which can be overcome by developing a uniform academic curriculum for all.
- Increasing awareness of the importance of oral health among school staff and school administration, along with receiving support and promotion from state and territorial oral health programs like NOHP can play a vital role to meet the unmet dental needs thereby improving overall general health.

References

- [1] Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C. The global burden of oral diseases and risks to oral health. *Bulletin of the World Health Organization*. World Health Organization; 2005. pp. 661–669.
- [2] Kaur P, Singh S, Mathur A, Makkar DK, Aggarwal VP, Batra M, et al. Impact of Dental Disorders and its Influence on Self Esteem Levels among Adolescents. *J Clin Diagnostic Res*. 2017; 11: ZC05.
- [3] Jain YK, Joshi NK, Bhardwaj P, Suthar P. Health-promoting school in India: Approaches and challenges. *J Family Med Prim Care* 2019;8:3114-9.
- [4] World Health Organisation. WHO Information Series on School Health—Oral Health Promotion: An Essential Element of a Health-Promoting School. Geneva; 2003.
- [5] Gargano L, Mason MK, Northridge ME. Advancing Oral Health Equity Through School-Based Oral Health Programs: An Ecological Model and Review. *Front Public Heal*. 2019; 7: 359.
- [6] Stetler CB, Legro MW, Wallace CM, Bowman C, Guihan M, Hagedorn H, Kimmel B, Sharp ND, Smith JL. The role of formative evaluation in implementation research and the QUERI experience. *J Gen Intern Med*. 2006;21(2):S1–8
- [7] Ramroop V, Wright D, Naidu R. Dental health knowledge and attitudes of primary school teachers toward developing dental health education. *West Indian Med J*. 2011;60:576-80.
- [8] Ronto R, Rathi N, Worsley A, Sanders T, Lonsdale C, Wolfenden L. Enablers and barriers to implementation of and compliance with school-based healthy food and beverage policies: a systematic literature review and meta-synthesis. *Public Health Nutr*. 2020;23(15):2840–55.
- [9] Roger J. Melbourne: Government of Victoria. Evidence based oral health promotion. 2011.
- [10] Centers for Disease Control and Prevention. Parent Engagement: Strategies for Involving Parents in School Health. Atlanta: U.S. Department of Health and Human Services; 2012.
- [11] <https://qcin.org/public/uploads/ck-docs/1609235054.1608528374.Quality-in-School-Education.pdf>
- [12] Gambhir RS, Sohi RK, Nanda T, Sawhney GS, Setia S. Impact of school based oral health education programmes in India: A systematic review. *J Clin Diagn Res* 2013;7:3107-10.
- [13] Khoshnevisan MH, Pakkhesal M, Jadidfarid M-P, Nejad G. School-based oral health promotion: a thorough review. 2017; 35: 143–149.
- [14] Murray, N.G., Low, B.J., Hollis, C., Ross, A.W., & Davis, S.M. (2007). Coordinated school health programs and academic achievement: A systematic review of the literature. *Journal of School Health*, 77, 589-600.
- [15] de Castilho AR, Mialhe FL, Barbosa TS, Puppim-Rontani RM. Influence of family environment on children's oral health: a systematic review. *J Pediatr*. 2013;89:116–23.

Journal of Coastal Life Medicine

- [16] Nyandindi U, Palin-Palokas T, Milén A, Robison V, Kombe N, Mwakasagule S. Participation, willingness and abilities of school teachers in oral health education in Tanzania. *Community Dent Health*. 1994;11:101-4.
- [17] Kranz AM, Rozier RG, Zeldin LP, Preisser JS. Oral health activities of early head start teachers directed toward children and parents. *J Public Health Dent*. 2011;71:161-9.
- [18] DeBiase CB. Dental health education. Theory and practice. London: Lea & Febiger, 1991.
- [19] Mialhe, Fábio. (2014). Teachers' views about barriers in implement oral health education for school children: a qualitative study. *Brazilian Dental Science*. 17. 65.
- [20] Mwangosi IE, Mwakatobe KM, Astrom AN. Sources of oral health information and teaching materials for primary schoolteachers in Rungwe District, Tanzania. *Int Dent J*. 2002;52:469-74.
- [21] Barnekow Rasmussen, Vivian, Buijs, Goof, Clift, Stephen, Bruun Jensen, Bjarne, Paulus, Peter. et al. (2006) Health-promoting schools: a resource for developing indicators. *EUR/06/5061578214* p.
- [22] Markovic, D.; Soldatovic, I.; Vukovic, R.; Peric, T.; Campus, G.G.; Vukovic, A. How Much Country Economy Influences ECC Profile in Serbian Children—A Macro-Level Factor Analysis. *Front. Public Health* 2019, 7.
- [23] Alsumait, A. Evaluation of a Long Standing School-based Oral Health Program: A Sequential-explanatory Mixed-Method Approach. Ph.D Thesis, University of Alberta, Edmonton, AB, Canada, 2016.
- [24] Tiwari T., Cofano L., Wood C., Frantsve-Hawley J. Challenges in Implementing School-Based Oral Health Programs: Short- and Long-Term Impact of COVID-19. Boston, MA, and Reno, NV: CareQuest Institute for Oral Health and the Association of State and Territorial Dental Directors; May 2021. DOI: 10.35565/CQI.2021.2031