

# Effect of Oral Self-examination on Oral Care Practices among School-going Boys: A Quasi-experimental Study from District in Rural Central India

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## ABSTRACT

**Background:** Oral diseases have been a persistent public health problem globally, with almost every individual suffering from poor oral health at least once in their lifetime. Oral health problems affect 3.9 billion people globally. Dental caries, periodontal disease, and oral cancer are examples of common oral conditions that meet the requirements for being classified as public health issues. Oral health promotion through school is recommended by the World Health Organization (WHO) for improving knowledge, attitude, and behavior related to oral health and for the prevention and control of dental diseases among school children.

**Materials and methods:** This school-based quasi-experimental study with nonequivalent group design was conducted between January and June 2022 among adolescent students from class V (5th year of school) to class X (10th year of school). The sample size was around 460. Oral self-examination was done once a month in each class of school by the teacher and also once a week in each class of school by a peer group.

**Results:** The percentage of fathers' education belonging to high school during the post-intervention phase in the intervention school and control school is 37 and 24.8%, respectively. The distribution of oral hygiene index simplified score (good) increased from 29.6 to 38.7% in the intervention school and the proportion of oral hygiene index simplified (poor) decreased from 20.4 to 20% in the intervention school.

**Conclusion:** Schools offer a great environment for teaching about health issues, modeling healthy behaviors in them, connecting them with services, and interacting with parents and the community through the students, education is one of the most efficient ways to reach children and adolescents.

**Keywords:** Oral health, School children, Self-care.

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## INTRODUCTION

Almost everyone has experienced poor oral health at some point in their lives, making oral illnesses a persistent global public health concern. Globally, 3.9 billion people suffer from oral health issues. The prevalence of oral disease is rising in developing nations and is notably higher among the underprivileged and impoverished. In India, about four out of five children between the ages of six and nineteen suffer from dental caries.<sup>1</sup>

A vital component of overall health is oral health. Dental disease is exacerbated by poor oral hygiene in addition to causing it. Tobacco use has been linked to gingival as well as periodontal inflammatory conditions, diseases that could be cancerous, and oral cancer. In India, there are many cases of oral cancer.<sup>2</sup>

People don't return to the dentist for follow-up care and instead seek symptomatic therapy for oral issues, notably pain. The main obstacles for rural women seeking dental care are their dread of the procedure, their anxiety, their lack of time, their propensity for self-medication, and their lack of commitment to their oral health.<sup>2</sup>

Dental caries, periodontal disease, and oral cancer are examples of common oral conditions that meet the requirements for being classified as public health issues. Periodontal disorders are quite common, especially in socially disadvantaged communities, have an adverse effect on quality of life, and are expensive to treat. Inequity associated with variables including poor income, fewer years of schooling, and black or mixed-race ethnicity characterizes populations that are generally at risk.

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Among the population between the ages of 18 and 64, SDH like social security and health insurance, low levels of literacy, the use of dental services, and other behavioral aspects like heavy tobacco use were significant risk factors for periodontal and other oral diseases among groups with comparable socioeconomic status.<sup>3</sup>

Poor dental hygiene, tobacco use, psychological variables, and related systemic problems are the main risk factors for periodontal diseases. Public health initiatives must address these issues, but

they also need to acknowledge and address the underlying distal forces that shape and pattern these global dangers.<sup>4</sup>

The World Health Organization (WHO) recommends oral health promotion in schools to prevent and control dental diseases in schoolchildren as well as to improve oral health-related knowledge, attitude, and behavior. It has been demonstrated that school-based oral health initiatives enhance teenagers' oral health and behavior linked to oral health.<sup>5</sup> One of the most important ways to reach kids and teenagers is through schools, which are the perfect setting for educating them about health issues, establishing good habits in them, connecting them with resources, and using the students to connect with parents and the community. Research demonstrates that school health programs have a high cost-benefit ratio and that schools may effectively carry out health initiatives.<sup>6</sup>

Oral self-examination is useful for both raising awareness and identifying oral health issues. It is a simple, inexpensive, and non-intrusive procedure. Students' oral hygiene will improve as a result of oral health education in school health programs, and they will be better equipped to detect oral lesions early on. Disease prevention is aided by early diagnosis.<sup>7</sup> The objective of the study measure the effect of oral self-examination on oral care practices among school-going boys in central rural India.

## MATERIALS AND METHODS

A school-based quasi-experimental study with a non-equivalent group design was conducted among adolescents in class V (their fifth year of school) to class X (their tenth year of school) between January and June 2022. In the Wardha district of Maharashtra state, India, our medical institute runs a school health education program at several secondary schools. The study was carried out in eight different Wardha schools while considering implementation feasibility. The study also included boys.

The sample size was calculated using OpenEpi software. Assuming a reduction of 10% from baseline prevalence of 15% chewing smokeless tobacco,<sup>8</sup> power of 90% and confidence interval of 95%, and a 10% data loss due to nonresponse/non-attrition, the estimated sample size was around 460. Hence 230 students will be included in each group. The school had a total strength of around 100 from class V to class X in each school. An enumeration List of all students from class V to class X was prepared based on their attendance register from the school which served as the sampling frame. 60 students were selected randomly from the attendance register from each school. All those who consented to participate were included in the study. All those who were suffering from any chronic illness were excluded from the study. The identity of study participants was kept confidential by assigning them a unique identification number. Socio-demographic data were collected individually by interviewing each participant maintaining confidentiality and privacy.

The questionnaire was available in Marathi, and the participants were self-administered the Marathi questionnaire for filling.<sup>9</sup> The team was on hand to aid participants with any issues they were unclear about and to explain the meaning of the questions. Students were seated on chairs during the day to conduct oral examinations of the children. Before computing the oral hygiene index simplified (OHI-S) score, the principal investigator received training from a dentist to examine mouth health. Calculus index (CI) and debris index (DI) scores were computed. Individual tooth scores were added together for both indices. The debris index

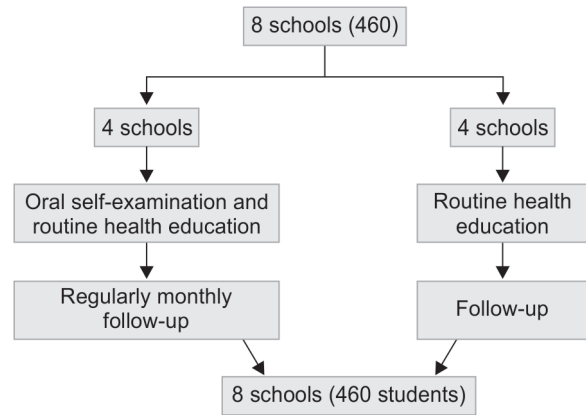


Fig. 1: Flowchart of intervention in the school

and calculus index were obtained by dividing this amount by the number of teeth analyzed. The OHI-S was calculated by adding the DI and CI. The OHI-S range is 0–6.<sup>10</sup>

## Intervention

### Pre-intervention Phase

It was a brief screening questionnaire to find out oral care practices. We assessed oral hygiene with the help of the OHI-S score. It was a more rapid method for evaluating the oral cleanliness of school children.

Oral self-examination workshop conducted for teacher group and peer mentor group. School teachers and peer groups trained by social workers and PG students. Oral self-examination was done once a month in each class of school by the teacher and also once a week in each class of school by a peer group. In this workshop, students learned the steps of oral self-examination and also detected oral lesions in the mouth. Teachers and peer mentor groups trained the students with the help of information pictorial brochures or leaflets.

### Post-intervention Phase

After oral self-examination training, with the help of the OHI-S score, we measured the oral hygiene status (Fig. 1).

## Ethical Consideration

The study was initiated after approval from the Institutional Ethics Committee (IEC). Privacy and confidentiality will be maintained for all information captured through both qualitative and quantitative methods.

Following a thorough explanation of the participatory health promotion activity, the school principal provided written informed consent. A different consent form was used to gain passive consent from the parents of the students who were part of the baseline and post-measurement. permission was obtained using IEC-approved permission forms in the regional language. The students gave their verbal consent when the baseline and post-measurement data were collected. Depending on the severity, study participants who were found to use tobacco were referred for counseling and/or therapy.

## RESULTS

### Sociodemographic Characteristic

Distribution of school-going boys in a class of intervention and control school.

Figure 2 shows the distribution of school-going boys according to class in intervention school and control school. The percentage of age belonging to the fifth class during the preintervention phase in intervention school and control school are 19.6 and 19.6%, respectively. The percentage of age belonging to the fifth class during a post-intervention phase in intervention school and control school are 20 and 20.4%, respectively.

The percentage of age belonging to 12 years during the preintervention phase in intervention school and control school is 20.9 and 20.9%, respectively. The percentage of age belonging to 12 years during the post-intervention phase in the intervention school and control school are 20.4 and 20%, respectively. The mean age is about 12.1. The Percentage of fathers' education belonging to high school during the pre-intervention phase in the intervention school and control school is 29.1 and 27%, respectively. The percentage of fathers' education belongs high school in the intervention school and control school are 37 and 24.8%, respectively. The Percentage of mothers' education belonging to primary school during the pre-intervention phase in intervention school and control school is 32.2 and 48.7%, respectively. The percentage of mothers' education belonging to primary school in intervention school and control school are 22.6 and 48.7%, respectively.

The percentage of father's occupation belongs to farmers during the pre-intervention phase in the intervention school and control school is 33.9 and 48.7%, respectively. The percentage of fathers' occupations belonging to the farmers during the post-intervention phase in the intervention school and control school is 37.4 and 50%, respectively. The percentage of type of family belonging to the nuclear family during the pre-intervention

phase in the intervention school and control school are 73.5 and 72.2%, respectively. The percentage of type of family belonging to the nuclear family during the post-intervention phase in the intervention school and control school is 80.9 and 70%, respectively.

Table 1 shows the distribution of socioeconomic status of school-going boys in intervention school and control school. The percentage of socioeconomic status belonging to BPL during the pre-intervention phase in the intervention school and control school are 53 and 63.1%, respectively. The percentage of socioeconomic status belonging to BPL during a post-intervention phase in the intervention school and control school is 53.9 and 58.3%, respectively.

There was an increase in the number of times brushing on the day of the intervention school. Number of the students was increased for toothbrush use for cleaning their teeth after the intervention. Students in the intervention arm used to increase two times of brushing teeth. The duration of brushing their teeth had been increased among students of the intervention arm (Table 2).

The distribution of OHI-S scores (good) increased from 29.6 to 38.7% in the intervention school and the proportion of OHI-S (poor) decreased from 20.4 to 20% in the intervention school (Table 3).

## DISCUSSION

This present study was conducted in eight schools of districts in rural Central India. We assessed the effect of oral self-examination on oral care practices of school-going boys. There were four schools each in the control block and intervention block, respectively. Routine health education was conducted in the control school by teachers and peer groups and information regarding oral self-examination was given to children in intervention school by their peer groups once in week and their teacher gave information once in month. Peer groups and teachers were trained about the steps of oral self-examination before giving intervention.

A study conducted by Sanadhya et al.<sup>11</sup> on school children found a significant reduction in mean OHI-S Score from  $1.92 \pm 0.85$  to  $1.21 \pm 0.82$ . The study demonstrated that a school-based method may be used to simply deploy an effective intervention plan. Adolescence and juvenile smoke cessation programs were best implemented in schools. The study's strength was the students' enthusiasm in taking oral self-examination in class when they interacted with their peers. According to the study, oral self-assessment could be used to teach pupils in school skills.

## CONCLUSION

With growth in emerging nations, the burden of oral disease is disproportionately high among poor and disadvantaged people. Almost everyone has poor oral health at some point in their lifetime, making oral illnesses a persistent public health issue around the

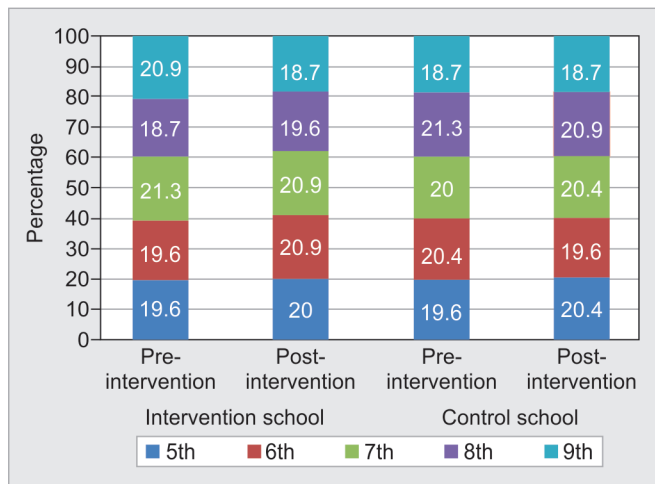


Fig. 2: Distribution of school-going children in class

Table 1: Distribution of socioeconomic status of school-going boys in intervention and control school

Socioeconomic status	Intervention school		Control school		p-value	
	Pre-intervention (N = 230)	Post-intervention (N = 230)	Pre-intervention (N = 230)	Post-intervention (N = 230)	Pre-intervention	Post-intervention
APL	40 (17.4%)	43 (18.7%)	48 (20.9%)	54 (23.5%)	0.258	0.097
BPL	122 (53%)	124 (53.9%)	145 (63.1%)	134 (58.3%)		
No cards	62 (27%)	56 (24.3%)	32 (13.9%)	35 (15.2%)		
Antyodaya	6 (2.6%)	7 (3%)	5 (2.1%)	7 (3%)		

**Table 2:** Details of oral care practices

	Intervention school		Control school		p-value	
	Pre-intervention (N = 230)	Post-intervention (N = 230)	Pre-intervention (N = 230)	Post-intervention (N = 230)	Pre-intervention	Post-intervention
Brushing teeth during the day						
Once	191	181	216	226	0.645	0.294
Twice	39	49	14	4		
Used for cleaning teeth						
Finger	22	5	33	30	0.920	0.381
Toothbrush	208	225	197	200		
Timing of brushing teeth						
Morning and night	36	42	11	7	0.539	0.782
Morning	194	188	219	223		
Duration of brushing their teeth						
1–2 min	78	64	78	94	0.089	0.009
Less than min	78	39	93	91		
More than 2 min	74	127	59	45		

**Table 3:** Oral hygiene index simplified score

	Intervention school		Control school		p-value	
	Pre-intervention (N = 230)	Post-intervention (N = 230)	Pre-intervention (N = 230)	Post-intervention (N = 230)	Pre-intervention	Post-intervention
OHI-S						
Good (0.0–1.2)	68 (29.6%)	89 (38.7%)	73 (31.4%)	68 (29.6%)	0.010	0.005
Fair (1.3–3.0)	115 (50%)	95 (41.3%)	119 (51.7%)	122 (53%)		
Poor (3.0–6.0)	47 (20.4%)	46 (20%)	39 (16.9%)	40 (17.4%)		

p-value by Chi-squared test

world. Since schools offer a great environment for teaching about health issues, modeling healthy behaviors in them, connecting them with services, and interacting with parents and the community through the students, education is one of the most efficient ways to reach children and adolescents. School-based cessation programs facilitate the prevention of tobacco use initiation and help the users overcome difficulties that may crop up when they are attempting to quit tobacco.<sup>12</sup> The oral hygiene index and oral hygiene practices of school-going boys in the intervention school improved.

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