

Original Research

Effectiveness of school oral health screening and utilization of dental services among school children

¹Romshi Raina, ²Sakshi Raina, ³Varsha K Pavithran

¹Ex Registrar, Dept. Of Public Health Dentistry, GDC, Srinagar, Jammu and Kashmir, India;

²Dental Officer, ECHS, Samastipur, Bihar, India;

³Assistant Professor, Rajah Muthiah Dental College & Hospital, Annamalai, Tamil Nadu, India

ABSTRACT:

Background: School-based oral health screening could be a potential intervention that impacts the utilization of dental services, and subsequently effects oral health. The objective of the present study was to assess the effectiveness of school oral health screening in utilization of dental services among school children. **Methods:** The study was conducted among school children aged 5-12 years old that were randomly selected and divided into two groups (study group = 200 children) and (control group = 200). The dental attendance rates were determined after 3 months of follow-up period. **Result:** The dental attendance rate was 54.5% for the study group and 29.5% for the control group which is statistically significant. The attendance rate was higher among 9-12 years of children both in test group and control groups. Among the children who visited the dentist, 48.6% in the control group and 41.1% from the test group got simple amalgam and glass ionomer cement restorations. **Conclusion:** School oral health screening and referrals were found to be effective in increasing the utilization of dental services among school children.

Keywords: Oral health screening, Oral health promotion, School children, Utilization of dental services

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Corresponding author: Romshi Raina, Ex Registrar, Dept. Of Public Health Dentistry, GDC, Srinagar, Jammu and Kashmir, India

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INTRODUCTION

In India, children form about 38% to 40% of the total population, and 80% of them have high levels of dental diseases.¹ School dental screening is seen as a vehicle for bringing children with dental needs in contact with dental services. Dental screening of school children can help disadvantaged children by informing about their dental health status and motivating them to obtain appropriate treatment. Thereby school children may arrive at the dental practice which in turn increases dental attendance rates.²

Dental caries is the most commonly occurring disease condition among 291 conditions included in the 2010 Global Burden of Disease Study.³ Worldwide, 60%–90% of school children have dental caries. It is the leading chronic childhood disease throughout the world.⁴ Hence a need to address this rising burden is crucial. Since children spend a good number of hours in schools, oral screening, in a school setting, is one of

the measures that may be used to ensure early detection and prompt treatment of dental caries. The World Health Organization recently supported screening of children for dental diseases and conditions in the school setting to help reduce costs of dental service provision and to support planning and provision of school oral health services.⁵

Public health screening is defined as ‘the presumptive identification of unrecognized disease or defect by the application of tests, examinations, or other procedures which can be applied rapidly.’¹⁷ Screening tests sort out apparently well persons who probably have a disease from those who probably do not. A screening test is not intended to be diagnostic. Persons with positive or suspicious findings must be referred to their physicians for diagnosis and necessary treatment. Dental screening in schools has been practiced in several countries over the past decades. The process involves visual examination of children in schools, identification of dental diseases and conditions,

followed by apprising parents of those children who screen positive for both the disease condition and the treatment choices. Generally, dentists undertake school dental inspection and are responsible for the decision on referral of a child.⁵ The true objective of screening is the detection of disease at a point in its natural history when it is not yet symptomatic. The incipient lesions on teeth indicate the presymptomatic, reversible stage in the progression of dental caries. Ideally, it is in this stage that screening should identify the risk of dental caries; however, in practice, dental screening is reduced to identifying clinical cavitation on the tooth, which most of the times is very obvious to the individual.⁷

The objective of the present study was to assess effectiveness of school oral health screening in increasing the utilization of dental services among school children.

METHODOLOGY

The present study was conducted among 5–12-year-old school going children. There were a total of 50 schools, consisting of 20 government schools and 30 private schools. Of these, 10 private schools and 15 government schools were almost equidistant from the dental hospitals regarding the accessibility to dental care.

These 25 schools were then subjected to a two-stage sampling technique for the selection of schools. The study population was made up of 200 school children in the study group and 200 school children in the control group. The school children were divided into two age groups, 5-8 years and 9-12 years group. All eligible school children aged 5-12 years attending the registered schools in the study area were included. Those children whose parents decline the invitation to participate and children who refuse to be screened on

the day were excluded. Informed consent was obtained from the parents of all the participating children, and ethical clearance was obtained from the Institutional Review Board.

All the school children in the study group who were present on the day received screening for various dental diseases/conditions according to American Dental Association specified type III clinical examination method.

The control group receives no such intervention. A child with positive screening had a referral card to his/her parent. Information on the card included clinical findings on screening, and the treatment required by the child.

In order to obtain the dental attendance rate among the control group, 200 children were randomly taken and asked, whether they visited the dentist during the past 3 months. They were examined, and dental findings were noted.

STATISTICAL ANALYSIS

Data were processed using Microsoft Excel 2007 and analyzed using SPSS version 20.0. A level of $P < 0.05$ was adopted to determine the statistical significance between different groups. Chi-square test was used to test the significance of the difference between two proportions.

RESULTS

SOCIO- DEMOGRAPHIC PROFILE OF THE PARTICIPANTS

Table 1 shows the total number of children examined in the 5-12 years old age group among both genders. The dental attendance rates in the study and control groups were 54.5% and 29.5% respectively. The difference in the attendance rate was statistically significant ($p = 0.02$).

Table 1: Distribution of study population according to age and gender

Age (years)	Gender	Control group (%)	Study group (%)
5-8 years	Male	80 (66.66%)	75 (60%)
	Female	40 (33.34%)	50 (40%)
9-12 years	Male	50 (62.5%)	30 (40%)
	Female	30 (37.5%)	45 (60%)
Total		200	200

UTILIZATION OF DENTAL SERVICES ACCORDING TO AGE AND GENDER

In both groups as the age increased, the dental attendance rates were also increased, which was statistically significant only in the study group ($p = 0.03$). Among male and female school children in both the groups, the result was not statistically significant [Table 2].

Table 2: Utilization of dental services according to age and gender

Variables	Study Group	Control Group
Age		
5-8	37 (18.5%)	28 (14%)
9-12	72 (36%)	31 (15.5%)
Total	109 (54.5%)	51 (29.5%)
p-value	0.03*	0.43
Gender		
Male	48 (44.0%)	36 (70.6%)

Female	61(55.9%)	15 (13.8%)
Total	109(54.5%)	51(29.5%)
p value	0.78	0.83

*Statistically significant

Majority of the school children utilized the service of restoring teeth with Glass ionomer cement /amalgam in both study (48.6%) and control (41.1%) group. Least utilized treatment was pulp therapy (12.8%) in study group while as extractions and oral prophylaxis (10.1%) were the least utilized among control group.

Table 3: Utilization of dental services among study and control groups according to treatment modalities

Treatment	Study group (%)	Control group (%)	P value
GIC/amalgam	53 (48.6%)	21 (41.1%)	0.080
Pulp therapy	14 (12.8)	12 (23.5%)	0.157
Extractions	20 (18.3)	11 (10.1%)	0.280
Oral Prophylaxis	22 (20.2)	11 (10.1%)	0.320
Total	109	51	0.90

DISCUSSION

Given the high level of oral diseases in children, the norms of only visiting the dentist when in pain,⁸ and the availability of free dental services through the health departments, school-based screening could be an appropriate intervention for the epidemic of childhood dental caries.

While studies in other countries have examined the impact of school screening on dental visits and dental caries and showed variation in their results.⁹⁻¹²

Our study demonstrated the school oral health screening was able to increase the utilization of dental services in study group (54.5%) as compared to control group (29.5%). The results were similar to the studies conducted by Donaldson and Kinirons,¹⁰ Hebbal and Nagarajappa¹ and Fox.¹³ They demonstrated that the school dental screening was capable of stimulating dental attendance rates and may be used to decrease dental health inequalities.

In both groups, no significant difference was found among males and females, though females in the study group and males in the control group had higher dental attendance rates which may be due to their self-perceived need for treatment. These results were in contrast to the study conducted by Hebbal and Nagarajappa¹ in which males had higher dental attendance rates compared to females. They concluded that historically, in a country like India where more preference is almost always given to the male child over a female child in all walks of life, it was not surprising to see that attendance for treatment was greater among males than among females.

The dental attendance rates in the study group were higher among 9-12 years of age group than 5-8 years of age. The results were similar to the studies conducted by McCunniff et al.¹⁴ and Hebbal and Nagarajappa¹ in which they explained that older child feel more independent and becomes self-conscious about his esthetics and is influenced by his or her peer groups, and the child may come for treatment without waiting for a parent to accompany him or her.

In this study, most of the children who attended the dentist either from the study or control group presented with dental caries in contrast to the other

dental diseases or conditions. The results were similar to study conducted by Hebbal and Nagarajappa¹ in which they explained that people in India tend to associate dentistry with treatment of carious teeth only, rather than with gingivitis or fluorosis, malocclusion that cause hardly any discomfort to the patient. This study had the follow-up period of 3 months. Zarod and Lennon¹⁵ suggested that 3 months are sufficient for dental attendance and treatment to take place.

There is some evidence to support that vigorous follow-up of children does lead to improved dental attendance rates. However, the acceptability to parents and the cost effectiveness of putting significant resources into elaborate follow-up procedures would need to be scientifically assured.¹²

School dental screening is a process that starts with the identification of the "at risk" children and ends with the successful treatment of the conditions identified by the screening and only when each step in the process is quality assured will the school dental screening program meet the exacting standards set by the national screening committee.

CONCLUSION

Our study demonstrated that the school oral health screening significantly increases the utilization of dental services among school children. Future research is required to identify the barriers in utilizing the dental services to its full potential and hence reduce the burden of oral diseases.

REFERENCES

1. Hebbal M, Nagarajappa R. Does school-based dental screening for children increase follow-up treatment at dental school clinics?. *Journal of dental education*. 2005 Mar;69(3):382-6.
2. Milsom KM. A randomised control trial of the effectiveness of dental screening of school children: dental attendance and treatment patterns in relation to socio-economic status. *Br Dent J*. 2006;200:687-90.
3. The Challenge of Oral Disease – A Call for Global Action. *The Oral Health Atlas*. 2nd ed. Geneva: FDI World Dental Federation; 2015.

4. Peterson PE. The World Oral Health Report 2003. WHO/NMH/NPH/ORH/03.2. Geneva: WHO; 2003.
5. Morgan M, Bennett H, Officer CD. Dental health screening-an overview of the literature. *Chief Dental Officer*. 2013 Sep 6.
6. Porta M, editor. *A dictionary of epidemiology*. Oxford university press; 2014 May 23.
7. Day R, Ferraz MB, Hawkey CJ, Hochberg MC, Kvien TK, Schnitzer TJ. Ethics of dental health screening. *Ethics*. 2016 Jul;1(3):171-6.
8. El Bcheraoui C, Tuffaha M, Daoud F, Kravitz H, AlMazroa MA, Al Saeedi M, Memish ZA, Basulaiman M, Al Rabeeah AA, Mokdad AH. Use of dental clinics and oral hygiene practices in the Kingdom of Saudi Arabia, 2013. *International dental journal*. 2016 Apr 1;66(2):99-104.
9. Burden DJ, Mitropoulos CM. Effectiveness of a personalised referral letter following orthodontic screening. *Community dentistry and oral epidemiology*. 1994 Oct;22(5PT1):323-6.
10. Donaldson M, Kinirons M. Effectiveness of the school dental screening programme in stimulating dental attendance for children in need of treatment in Northern Ireland. *Community dentistry and oral epidemiology*. 2001 Apr;29(2):143-9.
11. Cunningham CJ, Elton R, Topping GV. A randomised control trial of the effectiveness of personalised letters sent subsequent to school dental inspections in increasing registration in unregistered children. *BMC oral health*. 2009 Dec;9(1):1-8.
12. Milsom K, Blinkhorn A, Worthington H, Threlfall A, Buchanan K, Kearney-Mitchell P, Tickle M. The effectiveness of school dental screening: a cluster-randomized control trial. *Journal of dental research*. 2006 Oct;85(10):924-8.
13. Fox C. Evidence summary: what is the effectiveness of alternative approaches for increasing dental attendance by poor families or families from deprived areas?. *British dental journal*. 2010 Feb;208(4):167-71.
14. McCunniff MD, Damiano PC, Kanellis MJ, Levy SM. The impact of WIC dental screenings and referrals on utilization of dental services among low-income children. *Pediatric dentistry*. 1998 May 1;20:181-7.
15. Zarod BK, Lennon MA. The effect of school dental screening on dental attendance. The results of a randomised controlled trial. *Community dental health*. 1992 Dec 1;9(4):361-8.