Early Childhood Oral Health Promotion for the Rural Population of India

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PROJECT DETAILS: As per the National Oral Health Survey and Fluoride Mapping (2002-03), more than 50% 5 year-old children in India suffer from dental caries. The survey also reports a skewed distribution of dental caries experience, and a very high proportion of untreated caries. The Significant Caries (SiC) Index is found to be two or more times higher than dmft/ DMFT levels. The prevalence of caries is reportedly slightly higher in children in rural areas (National Oral Health Survey and Fluoride Mapping, 2002-03).

Oral diseases are the commonest chronic diseases and are among the most expensive diseases to treat (Sheiham, 2005). In the developing countries, millions of children die every year of preventable diseases as the scarcity of resources deprive them a basic package of preventive healthcare. Therefore, restoring decayed teeth remains well out of the reach of these countries due to the budgetary constraints, which means that more than 90% of the caries remains untreated. The effect of untreated caries on the growth and well-being of children often remains ignored (Sheiham, 2006). Dental caries affects children socially as well as psychologically. Children having poor oral conditions are three times more likely to remain absent in schools due to dental pain, and also perform poorly in studies (Jackson *et al*., 2011).

Oral diseases affect the quality of life of children and account for pain, impaired aesthetics, recurrent infections, eating troubles, sleeping difficulties, emergency visits to dentists and hospitals, poor ability to learn, insufficient nutrition, and improper growth and development (Sheiham, 2005). Furthermore, treating dental caries in children is expensive due not only to the direct costs of treatment but also the indirect costs such as the time taken off by the parents to take the child to a dentist (Sheiham, 2006). Rich countries witnessed a marked reduction in the experience of dental caries in children and young adults during 1970 and 2000 (Fejerskov and Kidd, 2008); however, in the developing countries, owing to the westernized diets rich in sugar and inadequate exposure to fluoride, dental caries increased during the same period (Watt, 2005; Petersen, 2005). Dental caries is a silent epidemic originating from negative health behaviours of individuals that are culture-bound and opportunity-bound (Edlestein, 2000). Improper dietary habits are responsible for the causation of decay, which in turn, can be due to 'social deprivation' (Fejerskov and Kidd, 2008). A "marked gradient in the three oral diseases" (dental caries, periodontal disease and oral cancer) in highly and least developed countries was reported by Hobdell *et al*. (2003). Petersen (2005) reported that the dental health as well as their behaviours in the lower class of people was poorer as compared to the high and middle income class.

Oral Health Promotion is a "planned effort to build healthy public policies, create supportive environments, strengthen community action, develop personal skills or reorient health services in pursuit of oral health goals" (Watt and Fuller, 1999). Different settings have been identified for the promotion of oral health in early childhood, such as primary care, hospitals and clinics, schools, preschools, *etc*.

Health practitioners, school and preschool teachers, local authorities and industry are potential partners in the oral health promotion (Daly *et al*., 2002). Research in life course perspective of health has emphasized the importance of a good early start in life for later adult health; for oral health, too, 'preschool' period is a critical period (Watt *et al*., 2001). Furthermore, the recent literature also supports a "directed/ targeted population approach" in the prevention of oral diseases, (particularly dental caries), for which preschool and school settings, as well as geographic targeting based on deprivation is suitable (Watt, 2005). The key to success of a health programme is the participation of stakeholders in it. The partnerships of parents and teachers in schools, and local health professionals are essential for the successful implementation of an oral health programme (Tomar, 2008). The need for a preventive programme targeting children in deprived communities is evidence-based.

No comprehensive oral health evaluation and promotion programme for the children residing in Taluka Panvel has ever been carried out to our knowledge. The MGM Dental College and Hospital, Navi Mumbai, located close to these rural areas, provides dental care to some residents (school children and adults) through community outreach programmes, and also offers free and subsidized treatments in the hospital. However, there exists an opportunity for an early childhood oral health promotional programme for the 0-6 year old children. The Department of Pediatric Dentistry and Department of Dental Public Health of MGM Dental College and Hospital, Navi Mumbai have approached the Government authorities for initiating a comprehensive Early Childhood Oral Health Promotion programme in Panvel region. The authorities have shown willingness for the same. The proposed programme has following aims and objectives:

Aims and Objectives

The proposed programme aims at developing and evaluating early childhood oral health promotion activities in Taluka Panvel in the District Raigad of the State of Maharashtra, India.

Objectives:

- To measure the dental caries prevalence and severity, and impact of ECC and S-ECC on oral health related quality of life
- To evaluate the effectiveness of oral health promotion tools (audio-visual and printed) for Early Childhood Oral Health Promotion
- To evaluate the effectiveness of fluoride varnish programme in terms of acceptance and sustainability
- To evaluate the effectiveness of preschool toothbrushing programme in terms of acceptance and sustainability
- To evaluate the utilization of dental services

Methods

I. Ethical clearance:

- Ethical permission from institutional ethics committee
- Permission from district health and education authorities
- Consent from all parents participating in the programme

II. Team:

- Chief investigators 2 (Dr Ashwin Jawdekar, Professor and Head, Department of Pediatric Dentistry, Dr Niraja Nadkarni, Reader, Department of Public Health Dentistry)
- Co-investigators 2 (Lecturers, Department of Pediatric Dentistry and Public Health Dentistry)
- Field workers 8-10 (Interns)

III. Inclusion and exclusion criteria:

This being a outreach programme, will target all the children (0-6 years) of the community (approximately 28000 in rural areas of Taluka Panvel, District Raigad). The possibility of extending the programme to children with special care needs and/or systemic conditions will be evaluated pragmatically. Children of parents not signing the consent form and not present on the day of visit will be excluded from the study.

IV. Validation of tools and calibration:

Prevalidated instruments will be used in the study.

Calibration of examiners will be done in the department of public health dentistry based on the WHO Oral Health Survey Guidelines.

V. Scheduling of the programme:

Approximate duration: 6 months-2 years

VI. Specifications of the programme

Age-group	Settings	People	Tools	Scope
0-2 years	Primary healthcare centres, hospitals (well-baby clinics), Anganwadi branches	Anganwadi workers (similar to midwifes), parents	DVD on infant oral care, printed booklets	Survey and Education
2-3 years	Primary healthcare centres, Anganwadi branches	Anganwadi workers, parents	Printed booklets, tooth song audio	Survey, Education and Fluoride varnish programme in dental van/or dental satellite centres
3-6 years	Preschools, Anganwadi branches	Anganwadi workers, school teachers	Printed booklets, tooth song audio	Survey, Education and Preschool programme of toothbrushing with fluoride toothpaste (free samples)

VII. Outcome measures

- Indexes: dmft, SiC, pufa, Early Childhood Oral Health Impact Scale (ECOHIS)
- Assessment of knowledge and knowledge retention in Anganwadi workers, school teachers and parents (using a prevalidated Questionnaire)
- Comparison of dental attendance pre- and post-programme
- Acceptance to and sustainability of fluoride varnish programme in 2-3 year-olds
- Acceptance to and sustainability of preschool programme of toothbrushing with fluoride toothpaste

VIII. Data analysis:

This study will be a mixed methods study (both quantitative and qualitative). Some parameters (dmft, SiC, pufa, ECOHIS, knowledge and knowledge retention, and

service utilization) will be assessed by quantitative methods using parametric or non-parametric tests depending upon the distribution of variables. The acceptance to and sustainability of fluoride varnish and preschool tooth brushing programmes will be assessed qualitatively using interviews and focus groups of stakeholders (parents, teachers, Anganwadi healthworkers, *etc*).

The statistical analysis will be carried out in consultation with the statistician of MGM Hospital, Navi Mumbai, using a suitable computer programme such as the SPSS.

References:

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PROJECT LEAD: This project will be led by Dr Ashwin Jawdekar at the MGM Dental College and Hospital, Sector 18, Kamothe, Navi Mumbai. This project will also be submitted as a PhD research proposal to Maharashtra University of Health Sciences for approval.