COMMENTARY

Fissure Sealants - Role in Dental Public Health in Context to Pakistan

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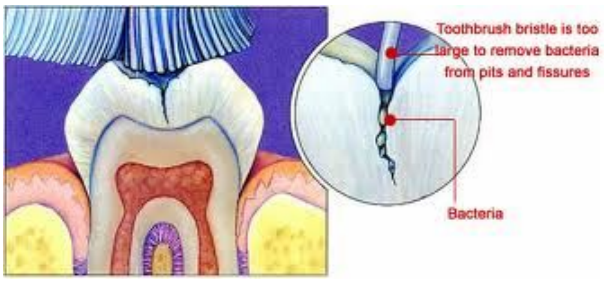
ABSTRACT:
Literature reports that first molars are the first to be lost due to dental caries in children globally. They also experience greater decay in pits and fissures which are relatively inaccessible to regular oral hygiene aids. Many preventive strategies have been instituted for reducing dental caries in general among children. Pits and fissures caries are difficult to counter by fluoridation alone. The role of pits and fissures sealants in dental public health programs have become significantespecially in children. Such programs have been targeted towards private practice globally in the past. In a country with deprived economic conditions, health care system and low literacy rate the success of such a program is unlikely. This articlehighlights the significance of caries prevention in general and the role of fissure sealants in dental public health programs in particular. Limitations of such programs and possible solutions to have a greater impact on prevention through sealants in a cost effective manner in context to local circumstances are also mentioned.

Keywords - pit and fissure sealants; child; dental caries

Patterns of tooth loss are quite consistent across the globe in all age groups, first molars being the first to be lost.[1] The major reason of loss of first molar among children is dental caries.[2] In developing countries like Pakistan, the caries prevalence among children is high,[3] the molars being worst affected. Literature cites that occlusal surfaces in oral cavity are just 12.5% out of which 2/3rd of the caries experienced by children start from the pits and fissures of teeth.[4] Moreover due to rapid urbanization and changing dietary patterns have led to greater decay in pits and fissures which are relatively inaccessible to oral hygiene aids. In rural regions of the country, the prevalence and DMFT may be low but untreated lesions are high.[5] This may be attributed to lack of awareness and resources for treatment.



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There is a dearth of literature regarding the preventive strategies for reducing dental caries in children. But, before instituting any strategy, the responsible factors for caries need to be identified for that population. Medications, poor oral hygiene skills/habits and poor dietary habits have been identified as general reasons in all age groups. Insufficient fluoridation and deep pits and fissures among children are the major causes together with the increase in fermentable carbohydrates in diet. Even otherwise fluoridation has least affect in pits and fissures of teeth. Globally fluoridation has been used on a large scale to counter dental caries with successful results. Oral health instructions, education and dietary counseling has also been utilized through private practice, school based and school linked programs. Other strategies comprising of bacterial count monitoring, antimicrobial agents and conservative restorative treatment have minimal role in public health programs. However, most of these strategies, especially fluoridation, affect the smooth surfaces to greater extent.[6] As the morphology of pits and fissures becomes unfavorable for access, the role of fluoride or the oral hygiene aids becomes minimal. Dietary habits also influence the caries development more in these areas. Hence the use of sealants, appropriately called pits and fissure sealants, becomes a necessary component of caries prevention. Sealants conservatively occlude the pits and fissures[7] cutting off access of fermentable carbohydrates to the bacteria in contrast to fluoridation and Hyatt's[8] technique of prophylactic odontomy. Hence, the bacteria become non cariogenic. Its efficacy for incipient lesions also necessitates its role as a complementary aid to fluoride use on a large scale.[9]

Furthermore, sealants are highly efficacious in reducing caries development especially in children when they are not aware of oral hygiene methods. They are minimally invasive and no patient compliance is needed. The retention of sealants has been under debate but studies have shown that long term retention rates are high.[10] The usual loss is in the first 6 months which is attributed to poor initial adherence to tooth surface. Once proper bonding of sealant is achieved the efficacy rises to 100 percent. So, following of proper procedural protocol by a skilled operator, it can be safely said that sealants are effective in reducing caries in children. This all stands true in a private setting.[11] However, for a successful

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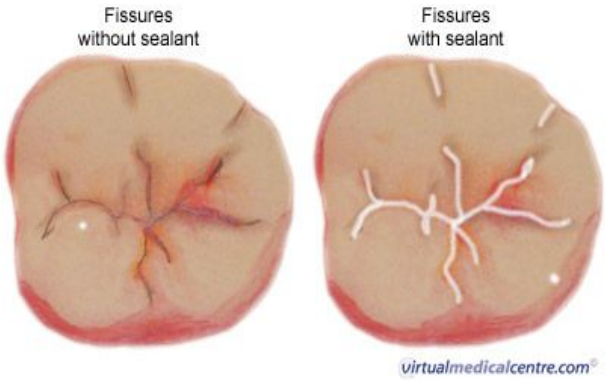
public health program, an easy applicable procedure taking minimum time and cost is imperative. For bonding procedures, ready adherence to enamel and easy manageable cleaning of the tooth is crucial for the program to be highly effective. The type and position of the tooth, eruption status, age and behavior of the child, skill of the operator may hinder proper application in a limited time scale.[12] Besides, vigilant recall/ monitoring and proper maintenance are required for long term sealant efficacy.



Since many studies done in Pakistan have cited high caries prevalence among school children with significant low treatment ratio,[5,13] therefore, preventive strategies especially pits and fissure sealants need to be enforced on large scale accessible to the masses in a cost effective way specially in school children. Initially, the sealants dental public health programs were directed towards its application in private practices globally. But here in Pakistan, lack of awareness, low literacy rate and low socioeconomic status of the population with a deprived health care system and access to dental care services will significantly affect the success of such programs. Conversely, the economic conditions of Pakistan compromise implementation of large scale projects with most of the masses below poverty line. Furthermore, about 5.1 million of Pakistani children aged 5 to 9 don't attend schools[14] or are enrolled in ghost government schools of the country. Hence, school based or school linked programs are not enough to counter the pit and fissure caries problem.

Apart from the cost effectiveness debate of sealants in public health programs, its immediate and considerable impact on reducing occlusal caries in contrast to fluoridation substantiates its use as a necessary adjunct to fluoridation. It has greater impact in non fluoridated areas. Cost effectiveness can be increased by involving dental auxiliaries as the applicators of sealants on a large scale.[15] Cost can also be minimized by proper selection of the recipient and selective application on the teeth. Looking at the scenario in Pakistan a separate community dental service should be started with sole responsibility toward prevention of oral diseases. The fissure sealing would be one of the programs in school going children to prevent dental caries. It is cost effective and the target population should be 6-12 years old children.There is no fluoridation program in Pakistan as such and sealant program becomes all the more necessary. Appropriately planned sealant programs at community level need to be instituted to reach children who otherwise are unlikely to receive sealants in schools. Even health care providers and community health workers apart from dental auxiliaries should be integrated in the health care system to impart awareness regarding caries prevention by sealants. Dental education programs through schools and community centers can also be incorporated for greater success.

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