Guidelines for the Application of Fissure Sealant in the School Health Programme in Sri Lanka

Oral Health Unit
Family Health Bureau
Ministry of Health

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Preface

It gives me great pleasure to present the second edition of the "Guideline for the Application of Fissure Sealant in the School Health Programme for the Prevention and Management of Pit and Fissure Caries" by the Family Health Bureau.

Dental caries in children is a major public health problem in Sri Lanka. Currently, the school oral health programme led by the school dental therapists is catering to this target group at its' maximum potential. Whilst the current economic backdrop has challenged the school health programme, it is the role of the Family Health Bureau to implement timely, cost-effective, evidence-based interventions to overcome these challenges.

Therefore, a strategy to integrate a systematic approach to applying fissure sealants on the first permanent molars of grade 1 children to facilitate the prevention and management of caries can be considered a timely and cost-effective intervention to mitigate dental caries in children.

This guideline for applying fissure sealants in the school health programme will provide the necessary technical knowledge and skills for the school dental therapists, and the other indicated responsible officers to provide fissure sealants for school children effectively.

I take this opportunity to thank the working committee who provided their expertise for the development of the guideline, the Association of Specialists in Restorative Dentistry in Sri Lanka, and especially the oral health unit, Family Health Bureau led by Dr. Nimali Wellappuli, Consultant in Community Dentistry for their commitment to develop and publish this valuable manual to the oral health care providers in Sri Lanka.

I would like to thank Dr. J.M.W. Jayasundara Bandara, Project Director of the Primary Healthcare Strengthening Project, for providing financing for publishing the guideline book, procuring fissure sealants, and conducting in-service training programmes around the island.

Dr. Chithramalee de Silva
Director, Maternal and Child Health
Family Health Bureau

Message from the Director General of Health Services, Ministry of Health

The oral health programme catering to the children within the maternal and child health program spearheaded by the Family Health Bureau is currently in the process of further strengthening the school oral health programme during the current economic crisis.

The national school dental services review conducted by the oral health unit of the Family Health Bureau in 2022 revealed that 57% of grade 1 school children in Sri Lanka were affected by dental caries. The first permanent molar is the most common tooth in children, which dental caries affect. The school dental services, which reach most underprivileged school children in Sri Lanka, are also at stake due to a stagnant level of caries in school children and an increased demand compared to its capacity in terms of manpower and material. Therefore, integrating a systematic approach to applying fissure sealants on the first permanent molars of grade 1 children in the existing dental services would facilitate the current school dental services to enrich its discernible preventive oral health care components.

This guideline for applying fissure sealants in the school health programme will provide the necessary guidance for the primary oral health care staff, and the other indicated responsible officers on effectively providing fissure sealants for school children.

It is my utmost pleasure to wish the Family Health Bureau, the publication of this worthy manual. I wish to assure my fullest support to all involved in producing this manual, which would help the healthcare providers in their endeavour to establish a standardized and risk-based fissure sealant application strategy for the prevention and management of pit and fissure caries of first permanent molars in school children in Sri Lanka.

Dr. Asela Gunawardena
Director General of Health Services
Ministry of Health, Sri Lanka

Message from the Deputy Director General (Dental Services)

According to the last National Oral Health Survey conducted in 2015/2016, the percentage of individuals with total caries experience (DMFT>0) was 63.1% among the 5-year-olds and 30.4% among the 12-year-olds. There is evidence for the polarization of dental caries within communities where socially deprived groups are severely affected in all age groups. The first permanent molar is the most common tooth in children, which dental caries affect.

School Dental Services is a well-established dental service in Sri Lanka. However, without exception, it is being affected by the current major economic crisis, similar to other health programs in Sri Lanka. The manifestations are a rising trend of oral diseases parallel to a breakdown of public oral health care services due to a shortage of essential dental materials and equipment. Consequently, full consideration should be given to implementing cost-effective interventions to prevent and control dental caries in children. Fissure sealant programme in schools have been identified as an effective intervention to prevent dental caries in children. Therefore, integrating a systematic approach to applying fissure sealants on the first permanent molars of grade 1 children in the existing dental services would facilitate the current school dental services to enrich its discernible preventive oral health care components.

This guideline for applying fissure sealants in the school health programme will provide the technical knowledge and skills necessary for the school dental therapists and dental surgeons to provide fissure sealants effectively for school children.

It is my utmost pleasure to thank the Oral Health Unit of the Family Health Bureau for taking the necessary actions to strengthen the existing school dental services and for compiling this timely manual.

Dr. Ananda Jayalal
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- Association of Specialists in Restorative Dentistry, Sri Lanka
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- Teachers and children of D.S. Senanayake College, Colombo 07
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List of Abbreviations

ADC	Adolescent Dental Clinic
CDC	Community Dental Clinic
MO/MCH	Medical Officer (Maternal and Child Health)
ETU	Emergency Treatment Unit

Chapter 1

Application of fissure sealant for prevention and management of pit and fissure caries

Introduction

Oral diseases are significant public health problems globally, whilst oral disease burden in children entails substantial social and economic impact on them, their families and society. Untreated dental caries is the most common preventable childhood disease in the world, being over five times as common as asthma among children aged 5 through 17 years[1]. In addition to infection and pain caused by untreated caries, poor oral health can have long-lasting, detrimental effects on school attendance and academic performance of children[1].

Literature reveals polarization of dental caries within communities where only socially deprived groups are affected in all age groups. A major proportion of caries within the dentition is confined to molar teeth[2]. The first permanent molar is the most common tooth in children, which is affected by dental caries[3]. Pit and fissure sealant therapy has been approved as an effective measure in preventing occlusal dental caries[4,5,6]. School sealant programs have been identified as an effective way to reach millions of children with dental sealants to prevent cavities worldwide[7]. There is reported evidence of such successful school-based sealant programmes from countries worldwide, including America, Europe and Asia [7,8].

Rationale

First permanent molars have been reported to be highly susceptible to caries attack[9]. First permanent molar tooth erupts into the mouth when the child is around 6 years old, and 2nd molar tooth erupts into the mouth when the child is around 12 years old[9]. First permanent molars are the earliest tooth of secondary dentition, which is to be exposed to the oral environment for the rest of the lifetime. Moreover, a study reported a one-unit increase in the number of carious first molars was associated with a significant increase in the number of other carious teeth[10]. First permanent molars are pivotal in dentition because of their significant role in maintaining a normal masticatory function and dento-facial harmony. Therefore, their effect on the overall development of children cannot be overlooked.

The occlusal surface of the first permanent molar is the tooth surface most vulnerable to dental decay. The molar teeth have many grooves (fissures) and pits on the chewing

(occlusal) surface and the buccal and palatal surfaces. Dental decay starts easily in these grooves due to their morphological complexity, making dental hygiene more challenging and increasing plaque accumulation. Therefore, approaches for preventive and restorative care for the permanent first molar tooth are an essential component of a child's overall oral care plan [5,6,7].

Moreover, according to well established evidence, the application of fissure sealants to all susceptible sites of primary and permanent teeth of children and young people with medical, physical or intellectual impairment should be considered, especially when systemic health could be jeopardised by dental disease or the need for dental treatment [4,5,6].

Sri Lanka is striking through a major economic crisis with a rising trend of oral diseases and a breakdown of public oral health care services due to a shortage of essential dental material and equipment. Therefore, a school based sealant programme, which has proven to be a cost-effective intervention globally, would invariably aid in easing the overstretched public dental health budget in Sri Lanka.

Background for fissure sealant programme in Sri Lanka

According to the last National Oral Health Survey conducted in 2015/2016, the percentage of individuals with total caries experience (DMFT>0) was 63.1% among the 5-year-olds and 30.4% among the 12-year-olds[11]. A recent study conducted among 640, 12 year old children from the Colombo Municipal Area revealed that 30.8% of their first permanent molars are affected with dental caries[12].

The effectiveness of school-based and school-linked fissure sealant delivery programmes at reducing caries in pits and fissures of children's teeth was reported in a systematic review of 10 studies[13]. The pooled median reduction in caries experience was 60% (range 5% to 93%) for children receiving sealants as part of a school sealant programme compared to children who did not receive sealants[13].

The oral health unit of the Ministry of Health launched a school-based sealant programme in 2013. A pilot project was carried out in selected 15 Medical Officer of Health areas. However, this project was not sustainable as it failed to select the correct focal point at the national level. Hence, monitoring and evaluation of the project were not properly conducted.

Pit and fissure sealant as a preventive strategy

Pit and fissure sealants are materials applied to the pits and fissure surfaces of teeth to create a thin barrier that protects the sealed surface from developing dental caries. Fissure sealant materials fall into two categories: resin-based and glass ionomer sealants. Resin-based fissure sealants effectively prevent caries on pit and fissure surfaces in children and adolescents. A Cochrane systematic review of 16 trials found that first permanent molar teeth sealed with resin-based sealant had 78% less caries on occlusal surfaces after 2 years and 60% less after 4–4.5 years compared to unsealed molars[14].

However, glass ionomer materials release fluoride over time. They are less sensitive to moisture contamination than resin-based materials, making them a potential alternative to resin-based sealants when moisture control is an issue. After an average follow-up of five years, the retention of Glass Ionomer Sealants revealed that 69% of the sealants were fully retained, and 21% were partially retained[15]. Moreover, the same study concludes that 65% of newly erupted teeth were free of dental caries after 13 years of placement of Glass Ionomer Sealants[15]. A study conducted in Sri Lankan schools revealed 23.2% had fully retained Glass Ionomer Sealants out of 358 teeth evaluated after 12 months. Notably, these teeth were free of caries at the end of this 12

months16. Another study conducted to assess the effectiveness of applying fissure sealant by school dental therapists in a rural district in Sri Lanka revealed no marked difference in the longevity of Glass Ionomer Sealant retention in clinic and mobile settings[17].

Two economic analysis compared the cost of three different sealant delivery strategies: 'seal all', 'risk-based' and 'seal none' [16]. Both studies found that, under baseline assumptions, the 'risk-based' approach was the most cost-effective strategy over a simulated 9 or 10 year period [18].

Summary of evidence-based recommendations for the use of fissure sealants

- The use of sealants compared with non-use in permanent molars with both sound occlusal surfaces and non-cavitated occlusal carious lesions in children and adolescents is strongly recommended [4,5,6].

- Children assessed at high caries risk should have fissure sealants applied and maintained in pits and fissures of permanent 1st (7 years) and 2nd (12 years) molar teeth [4,5,6].

- Using sealants over fluoride varnishes in permanent molars prevents and manages pit and fissure caries [4,5,6].

- The targeted population for the sealant programme should be considered for all individuals in specific high-risk groups, such as children attending special schools or designated disadvantaged schools. Although the routine application of sealants on primary molar teeth is not recommended, it may be considered for these selected high caries-risk children [4,5,6].

- When indicated, sealant should be applied to pit and fissure surfaces that are sound or have demineralization that appears confined to enamel [4,5,6].

- When indicated, sealants should be applied as soon as the permanent molars are sufficiently erupted to be isolated [4,5,6].

- The recall interval for children with high caries risk should not exceed 12 months [4,5,6].

Chapter 2

Aim of School-Based Fissure Sealant Programme

Aim of introducing a guideline for the application of fissure sealant;

To establish a standardized and risk-based fissure sealant application strategy for the prevention and management of pit and fissure caries of first permanent molars as an integral part of the school health programme in Sri Lanka to reduce levels of dental caries among children and improve their oral health-related quality of life.

Strategies

1. Integrate a systematic approach to applying fissure sealants on the first permanent molars of grade 1 children in the existing dental services. Such a strategy would facilitate the existing school dental services to enrich its discernible preventive oral health care components.

2. Monitoring and evaluating the school dental services based on preventive oral health care indicators.

3. Develop and include a separate preventive oral health care module in the Higher Diploma in Dental Therapy training programme.

4. Capacity building of school dental therapists and dental surgeons on performing preventive therapy.

5. Public awareness among parents of the children in the target group, school staff and primary health care staff.

6. Conduct longitudinal research based on the application of fissure sealant and its outcome to inform evidence-based dental public health practice.

Chapter 3

Operationalization of the Guideline

Planning at the district level

- The responsible officers of the district should set appropriate yearly targets considering the present district coverage and available resources.
- Whenever necessary, it is the responsibility of the Regional Dental Surgeon and the administrative support of the Regional Director of Health Services and the Medical Officer of Health to delegate responsibilities between the school dental therapists and the dental surgeons attached to the Adolescent Dental Clinic (ADC), Community Dental Clinic (CDC) and mobile dental clinics.

Selection of the target group

This guideline facilitates the application of fissure sealants to the following target group; School children in grade 1 who are identified as 'high-risk' for caries according to provided caries risk assessment criteria on page 8 - 9,

- Schools >200 students;

  All the students of grade 1 should be screened and assessed for caries risk prior to the application of fissure sealants.

  The students assessed as having high caries risk should receive sealant therapy if the first permanent molars are fully erupted at the time of assessment.

  If not, a record should be kept of these high-risk students. They should be assessed at grade 2 and apply fissure sealants.

- Schools < 200 students;

  All grade 1 and 2 students should be assessed for caries risk and apply fissure sealants accordingly.

- Signed informed consent should be taken from the parent/guardian of the child. Routine consent forms can be used for this purpose.

- ❖ Clinical oral examination should be conducted with a mirror and a blunt probe/explorer under an appropriate light source.

- ❖ Based on the caries risk assessment, those who fall into the high-risk category should be selected as the target group.

- ❖ The coverage can be achieved through an appointment-based system at the school dental clinic or by conducting outreach care clinics during routine school visits with appropriate mobile dental units or with the support of mobile dental buses. The ideal set-up would be the school dental clinics.

- ❖ All the children with special needs attached to designated classes of the target schools should be assessed and provided with sealant therapy for their first permanent molars and, as much as possible, for primary molars.

- ❖ Students in grade 1 and separate institutions such as piriven, private schools and orphanages should be provided with fissure sealants as much as possible according to the availability of resources in each district.

Caries risk assessment

Examination and history chart (H 975) should be used to assess the criteria to identify children with high-risk for caries ;

Children who have three or more deciduous molar teeth which are decayed, filled or missing due to caries should be selected as high-risk for caries.

Additionally, following supportive criteria can be considered to categorize children as high-risk for caries.

- ❖ Patient has life-time of poverty, low health literacy

- ❖ Patient has frequent exposure (>3 times/day) for the sugar containing snacks or beverages between meals per day

- ❖ Patient has low salivary flow

- ❖ Patient has visible plaque on teeth

- ❖ Patient presents with dental enamel defects

- ❖ Patient has interproximal caries lesion(s)

- Patient has new non-cavitated (white spot) caries lesions
- Patient has new cavitated caries lesions or lesions into dentin radiographically
- Patient has restorations that were placed in the last 3 years (new patient) or in the last 12 months
- Children with special needs should be considered as ‘’high-risk’’ for caries and should be referred to ADC/CDC for fissure sealant therapy

Selection of tooth

The first permanent molar teeth fully erupted with deep pits and fissures.

A tooth with the following characteristics should not be selected for fissure sealant application;

- Occlusal caries
- Tooth with existing restorations
- Tooth exhibits signs of approximal caries
- Isolation not possible

Special considerations

- A child with hypoplastic first permanent molar/s (dental hypoplasia) can be considered for fissure sealant therapy if they fulfil the selection criteria. However, the child should be referred to the nearest government OPD dental clinic to manage the exact condition.
- If there is a buccal pit caries and no signs of caries on the occlusal surface in the first permanent molar, do not place fissure sealant over the occlusal surface. Refer this patient to the nearest government dental surgeon for further investigation and necessary management.

Oral health care team for application of fissure sealants

The school dental therapist is the main oral health care provider for applying fissure sealants in the school health programme. However, according to the availability of human resources, the Regional Dental Surgeon (RDS) is responsible for delegating responsibilities between the School Dental Therapists (SDTT) and the Dental Surgeons (DS) attached to ADC, CDC and mobile dental clinics of each district.

Role of the public health care providers in the implementation of the application of fissure sealant in the school health programme

Role of the Regional Dental Surgeon

- ❖ Coordinate activities of the school dental services in the district.
- ❖ Delegate responsibilities between the school dental therapists and the dental surgeons attached to ADC, CDC, and mobile dental clinics of each district as necessary to achieve coverage.
- ❖ Training and supervision of school dental therapists.
- ❖ Conduct awareness programs for primary health care staff, children, parents, and school staff.
- ❖ Monitor and evaluate the programme in the district and coordinate the activities with the National Focal Point.
- ❖ Conduct or contribute to research studies to improve strategies.

Role of the MO/MCH

- ❖ Establish close collaboration with dental public health professionals to ensure uninterrupted oral health care for school children in the district.
- ❖ Monitor and evaluate the programme in the district and coordinate the activities with the National Focal Point.

Role of the Medical Officer of Health

- ❖ Ensure uninterrupted oral health care for school children in the MOH area.

Role of the Supervising School Dental Therapist

- ❖ Coordinate activities of the school dental services in the district.
- ❖ Technical supervision of the school dental therapists.

Role of the School Dental Therapist

- ❖ Screen the target groups and assess for caries risk.
- ❖ Provide fissure sealants to the target group.
- ❖ Review and follow up of the children who were provided fissure sealants.
- ❖ Provide oral health education to children and their parents.

Chapter 4

Practice guideline for placement of fissure sealants

Required equipment and instruments

- Dental Chair
- Chip syringe
- Mouth mirror
- Plastic filling instrument
- Tweezers
- Micro brush
- Light source
- Dappen glass to mix pumice
- Explorer/ Blunt probe
- Polishing brush
- Slow speed handpiece

Figure 1. Instrument tray required for the procedure

Required materials

- Powder
- Conditioner
- Yellow scoop
- Cotton
- Vaseline
- Liquid
- Mixing pad
- Gloves
- Cotton pellets
- Pumice

Figure 2. Materials required for the procedure

Application technique

1. If a child is having mild deposits, debris and plaque, it should be removed from the occlusal surface with a moist cotton pellet. If a child is having gross plaque, first improve oral hygiene prior application of fissure sealant. If there is gross debris, such as calculus, refer the child to the nearest government dental clinic.

Figure 3. Examination of the tooth for plaque, deposits or debris

2. Polish the occlusal surface using pumice applied with a polishing brush in a micromotor handpiece. Use a minimal required amount of pumice.

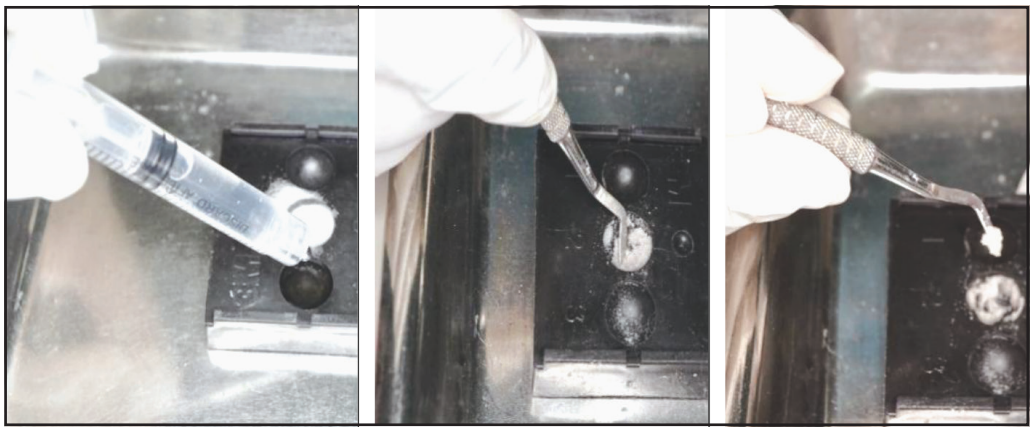

Figure 4. Use a minimal amount of pumice

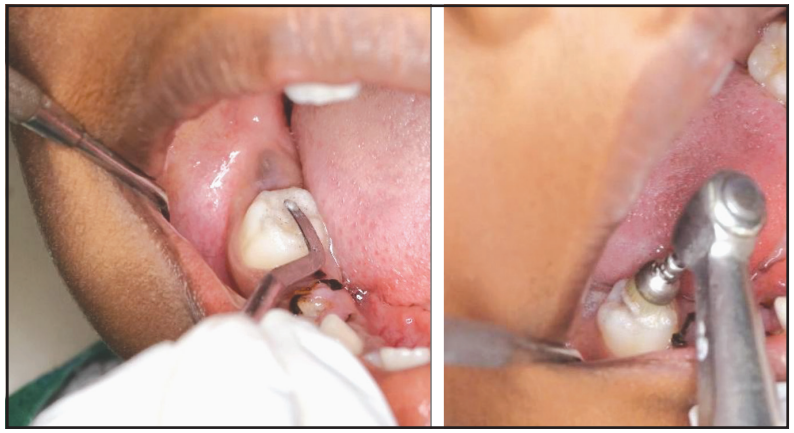

Figure 5. Application of pumice

3. Rinse the occlusal surface using a chip syringe and wipe with a moist cotton pellet to remove any remaining pumice. Check all pits with explorer to be sure any remaining pumice or plaque has been removed. Thoroughly rinse with water using a chip syringe again.

Figure 6. Rinsing with water

4. Isolate and dry the tooth surface. For better retention, proper and adequate isolation is mandatory. Properly block the submandibular, sublingual (anterior floor of the mouth) and parotid salivary gland (distal to upper first molar) duct openings.

Figure 7. Adequate isolation of the tooth

5. Following the manufacturer's instructions, apply dentine conditioner on the pits and fissures to be sealed using a micro-brush and wait for 20 seconds. This step will remove the smear layer.

Figure 8. Application of conditioner

6. Wash the tooth with water using a chip syringe. Dry the tooth with cotton wool and re-isolate the tooth, as mentioned in step 4.

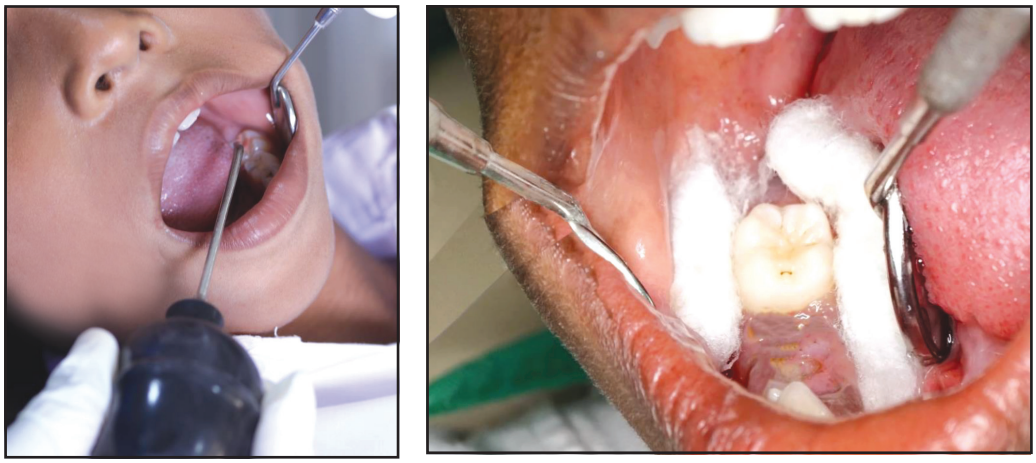

Figure 9. Rinsing with water and re-isolation

7. Material mixing procedure

   - Mix the sealant according to the manufacturer's specification.
   - Dispense the powder and liquid onto the mixing pad. Use the yellow scoop for a longer working time.

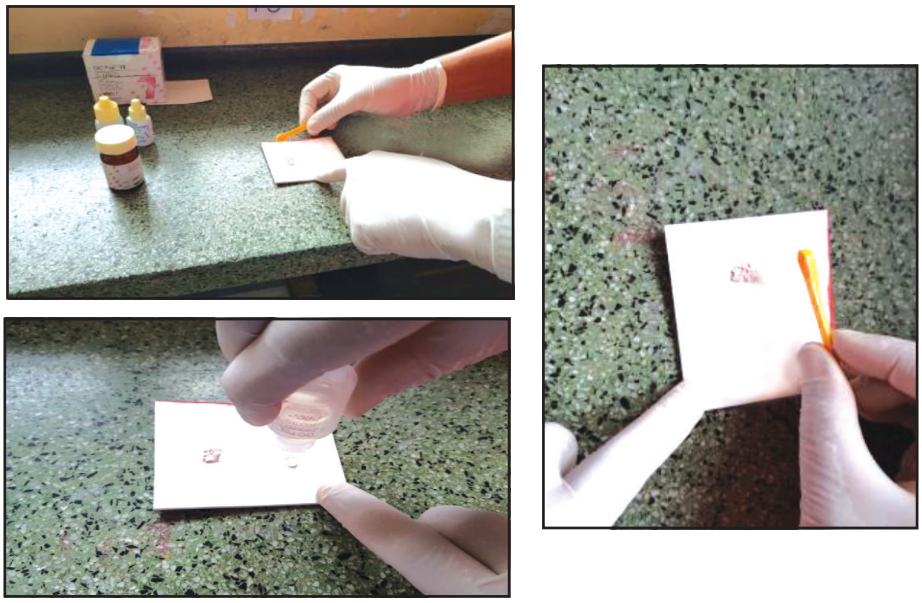

Figure 10. Dispense the powder and liquid onto the mixing pad

- Powder/ Liquid ratio: 1.1g/1g (One level yellow scoop of powder with one drop of liquid) – enough for sealing two teeth-upper and lower molars.
- Divide the powder into two portions.

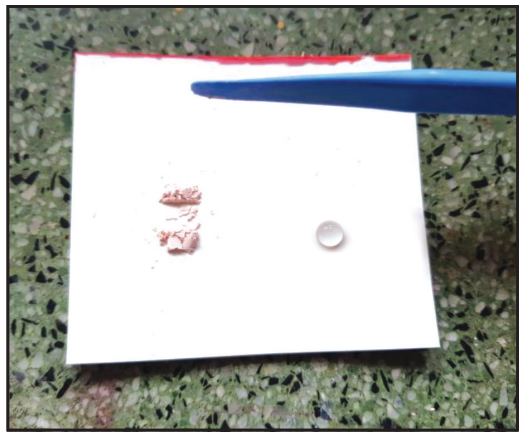

Figure 11. Divide the powder into two portions

- Spread the liquid over the pad.
- Mix the first portion of powder with liquid for 10 seconds.
- Incorporate the remaining portion and mix for 10 - 15 seconds.
- Total working time 1- 2 minutes.

Figure 12. Fissure sealant material mixed

8. Sealant material should be applied using a plastic filling instrument without incorporating air bubbles. The material is to be distributed uniformly and smoothly into the fissures, and then excess material is to be removed using the plastic filling instrument.

Figure 13. Placement of fissure sealant material

9. Apply vaseline on the sealant material after removing the excess.

Figure 14. Apply vaseline

10. Check for high points visually and tactically and ask patients to bite and feel for high points. If occlusal high points are present, correct them.

Figure 15. Sealed first permanent molar tooth

11. Instructions are to be given to the parents/caregivers after the fissure sealant application.

    - Avoid eating and drinking for one hour after the procedure.
    - Avoid biting on the relevant side for one day.
    - Avoid brushing sealed teeth for one night.
    - Avoid hard candy and chewing ice to prevent cracks on the sealant.
    - Check the fissure sealant regularly using a face mirror and report to the school dental therapist when the sealant is dislodged.
    - Emphasize the importance of appropriate brushing and dietary practices.

12. Check for any voids in the sealant at review visits.

Review and follow up

Students who received sealant therapy should be reviewed at the clinic after six months. If any suspicion exists related to moisture control, those children can be re-assessed within three months.

Importance of plaque management and dietary modifications for better oral health

Appropriate plaque management and dietary modifications are essential to an overall care plan for a high-risk child for caries. Therefore, it is important to reinforce proper oral hygiene maintenance practices and appropriate dietary modifications for children with high risk for caries. This will enhance the effect of the fissure sealants in preventing and managing caries in children.

Chapter 5

Monitoring and evaluation

Monitoring and evaluation of the application of fissure sealant is the responsibility of the Regional Director of Health Services, Regional Dental Surgeon, Medical Officer (Maternal and Child Health), Medical Officer of Health, Provincial Consultant Community Physicians/Consultant in Community Dentistry and the Consultant in Community Dentistry of the Oral Health Unit of the Family Health Bureau.

Activities will be evaluated by the Consultant in Community Dentistry of the Oral Health Unit of the Family Health Bureau annually in the National Annual Review of School Dental Services.

Table 1: Monitoring and evaluation plan

Outcome indicators	Means of verification	Frequency of monitoring	Frequency of evaluation
% of children of 12 years free of caries	**Monthly return (H 982)**	**Monthly by 15th of each month**	**Annual**

Output indicators	Means of verification	Frequency of monitoring	Frequency of data collection
% of children identified as 'high-risk' for caries in grade 1 (for FS programme)	**Monthly return (H 982)**	**Monthly by 15th of each month**	**Annual**
% of children received fissure sealants out of high-risk children	**Monthly return (H 982)**	**Monthly by 15th of each month**	**Annual**

Chapter 6

Risk and emergency management to sensitivity reactions

In case of contact with oral tissue or skin, remove immediately with cotton soaked with water.

In case of contact with eyes, flush immediately and seek medical assistance.

In rare cases, the product may cause sensitivity in some people. If any such reactions are experienced, discontinue the product and immediately send the patient to a hospital with an Emergency Treatment Unit (ETU).

Note-

If a patient experiences any allergic reaction to the therapy, inform the relevant Regional Dental Surgeon in writing. Regional Dental Surgeon should forward the complaint to the National Focal Point (FHB) through proper communication channels.

References

1. Ruff RR, Senthi S, Susser SR, Tsutsui A. Oral health, academic performance, and school absenteeism in children and adolescents: A systematic review and meta-analysis. J Am Dent Assoc. 2019 Feb;150(2):111-121.

2. Vehkalahti M, Tarkkonen L, Varsio S, Heikkilä P. Decrease in and polarization of dental caries occurrence among child and youth populations, 1976-1993. Caries Res. 1997;31(3):161-5.

3. Zhu F, Chen Y, Yu Y, Xie Y, Zhu H, Wang H. Caries prevalence of the first permanent molars in 6-8 years old children. PLoS One. 2021 Jan 13;16(1).

4. Irish Oral Health Services Guideline Initiative. Pit and Fissure Sealants: Evidence-based guidance on the use of sealants for the prevention and management of pit and fissure caries. 2010.

5. UK National Clinical Guidelines in Paediatric Dentistry: Use of fissure sealants including management of the stained fissure in first permanent molars. 2010.

6. Wright JT et al. Evidence-based clinical practice guideline for the use of pit-and-fissure sealants: A report of the American Dental Association and the American Academy of Pediatric Dentistry. JADA. 2016; 147 (8):672-680.

7. Association of State and Territorial Dental Directors. Best Practice Approach Reports: School-Based Dental Sealant Programs. 2003.

8. Griffin S, Naavaal S, Scherrer C, Griffin PM, Harris K, Chattopadhyay S. School-based dental sealant programs prevent cavities and are cost-effective. Health Aff (Millwood). 2016 Dec 1;35(12):2233-2240.

9. Agrawal SK, Bhagat T, Shrestha A. Dental caries in permanent first molar and Its association with carious primary second molar among 6-11-Year-old school children in Sunsari, Nepal. Int J Dent. 2023 Mar 21;2023.

10. Muhammad Ashraf Nazir et al., First permanent molar caries and its association with carious lesions in other permanent teeth. Journal of Clinical and Diagnostic Research. 2019 Jan, Vol-13(1).

11. Ministry of Health: National Oral Health Survey 2015/2016.

12. Widyarathne C. Prevalence, severity and associated factors of dental caries in the first permanent molars among 12-year-old government school children in the Colombo Municipality Area [dissertation]. Colombo: Postgraduate Institute of Medicine; 2023.

13. Truman BI, Gooch BF, Sulemana I, Gift HC, Horowitz AM, Evans CA, et al. Reviews of evidence on interventions to prevent dental caries, oral and pharyngeal cancers, and sports-related craniofacial injuries. Am J Prev Med, 2002;23(1 Suppl):21–54.

14. Saloranta A, Hiiri A, Nordblad A, Makela M, Worthington HV. Pit and fissure sealants for preventing dental decay in the permanent teeth of children and adolescents. Cochrane Database of Systematic Reviews 2008. Issue 4.

15. Marcovic D, Peric T, Petrovic B. Glass-Ionomer Fissure Sealants: Clinical Observations up to 13 Years. Journal of Dentistry, 2018; 79.

16. Dhanapriyanka HHM et.al. Retention of Fuji Vii glass ionomer fissure sealant used to prevent dental caries in children aged 7-9 years high caries risk in Maharagama area:2 year follow-up study; Evaluation after 12 months. In: 31st year Annual Scientific Sessions. College of Community Dentistry of Sri Lanka.

17. Gajanayake C. Public health interventions for oral health in rural schools in Sri Lanka. Proceedings of the International Conference on Public Health. 2022;7 (2): 66-74.

18. Griffin SO, Griffin PM, Gooch BF, Barker LK. Comparing the costs of three sealant delivery strategies. J Dent Res,2002;81(9):641–5.

19. Wickramasinghe D, Usgodaarachchi U. Identifying high-risk children for dental caries in school settings: A simple predictive model. Ceylon Medical Journal, 2022;67: 157.

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