

## Success Rate of Fissure Sealant on First Permanent Molars Among Public School Students in the Kingdom of Bahrain: One Year Follow-Up

Saba Al-Shaikh, MGDS, MPDC\* Mariam Ahmed, MFD, MGDS\* Enas Al-Shino, MGDS\* Tahera Al-Askeri, DDS, MGDS\* Wafa Sharaf, BDS, MGDS\* Wafa Abdulatif, BDS, MGDS\* Shiva Rahmanian, MGDS\* Eman Hamdan, MGDS, DIU ODCMF\* Salma Majdi, MGDS\*

### ABSTRACT

To assess the one-year success rate of fissure sealants applied to first permanent molars among public school students in the Kingdom of Bahrain during the 2022–2023 academic year. Cross-sectional observational study. Public schools across four regions in Bahrain: Southern, Northern, Capital, and Muharraq. A total of 975 students were examined, encompassing 1809 first permanent molars (UR6, UL6, LR6, LL6) that received fissure sealants. The study evaluated sealant retention 12 months post-application using Modified Simonsen's criteria, categorizing each tooth from intact to complete loss with caries. Regional distribution was: Southern 28.0%, Northern 32.8%, Capital 19.1%, and Muharraq 20.1%. Retention rates were low. Non-intact sealants were found in 41.4% of UR6 and 41.3% of UL6 teeth. The lower molars showed the highest rates of missing sealants, with 66.1% (LR6) and 66.2% (LL6) lacking fissure sealants. Only 18.3% of UR6 and 10.5% of LL6 maintained intact sealants after one year. Fissure sealants applied to first permanent molars exhibited a high failure rate within 12 months. While sealants are a recognized preventive intervention for occlusal caries, the findings highlight the need for improved application techniques, quality assurance, and periodic follow-up to ensure long-term effectiveness. These insights can guide future preventive strategies and policy development in Bahrain's school-based oral health programs.

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\* Primary Health Care Centers  
Ministry of Health  
Kingdom of Bahrain.  
Email: dr-saba87@hotmail.com & drmahmadi@gmail.com