



**SDM**  
**College of Dental Sciences & Hospital**  
Dhavalnagar, Sattur, Dharwad - 580009, Karnataka, INDIA  
Recognised by Dental Council of India, New Delhi



**SHRI  
DHARMASTHALA  
MANJUNATHESHWARA  
UNIVERSITY**

**SHRI DHARMASTHALA MANJUNATHESHWARA  
UNIVERSITY, DHARWAD, KARNATAKA**

**“Effectiveness of Primary Preventive Measures on Mineralization  
of Tooth Surface Based on DIAGNOdent Readings – A  
Randomized Control Study”**

by

**Dr. VOORA TARUNI**

Dissertation Submitted to the

Shri Dharmasthala Manjunatheshwara University, Dharwad,  
Karnataka,

In partial fulfilment of the requirements for the degree of

**MASTERS OF DENTAL SURGERY**

In

**PUBLIC HEALTH DENTISTRY**

Under the guidance of

**DR.K.V.V.PRASAD**

**PROFESSOR**

**DEPARTMENT OF PUBLIC HEALTH DENTISTRY**

**SDM COLLEGE OF DENTAL SCIENCES AND HOSPITAL  
SATTUR, DHARWAD**

**2020-2023**

## **ABSTRACT**

**Background and Objectives:** Dental caries is a multifactorial disease that is caused due to the imbalance between demineralization and remineralisation, which leads to the loss of tooth minerals and the formation of cavities. Caries is more likely to occur in children than in adults, so it is preferable to detect it early and implement professional primary preventive measures like pit and fissure sealants, topical fluorides, and oral health education before it progresses to cavities. Therefore, the aim of the present study is to compare the effectiveness of these three commonly used primary preventive procedures, on the mineralization of tooth surfaces based on DIAGNOdent (DD) pen readings.

**Methods:** This is a randomised, double-blind, three-arm parallel design study. 102 subjects aged 12 to 15 who met the inclusion criteria with demineralisation on permanent molar tooth were selected and followed for 6 months. The initial DIAGNOdent score was noted, and the subjects were allocated into three groups using block randomization so that the averages of the three groups remained equal and the treatments were randomly provided (three groups of 34 each) : Group A—pit and fissure sealants; Group B—topical fluorides; and Group C— oral health education. Following this, the treatment was provided. The mineralization score was recorded again using a DD pen after 3 and 6 months of baseline examination to assess the status of the tooth.

**Results:** The mean mineralization scores of Groups A, B, and C are 18.32, 17.35 and 17.47 at baseline which are not significant. After the treatment the mean differences of mineralisation scores of Groups A, B, and C are 7.25, 6.12, 2.70 and 9.25, 8.93, and -0.66 as compared to the baseline values at three and six months follow-up, respectively. The repeated measures ANOVA test revealed statistically significant differences ( $p < 0.001$ ) between the three treatment groups. At the end of three months, all three groups showed a significant

improvement in mineralization score compared to baseline. At the end of 6 months, the pit and fissure and topical fluoride groups showed a significant improvement in mineralization score compared to baseline, and there was no significant improvement in the oral health education group. The results showed that even after adjusting the parameters, there wasn't much of a difference.

**Conclusion:** Pit and fissure sealant and topical fluoride gel both are equally effective in promoting mineralisation on incipient caries in permanent molar teeth. Although the oral health education group has shown that it had a short-term effect, it was not sustained for six months.

**Keywords:** Mineralisation, Incipient caries, Pre-cavitated Lesions, DIAGNOdent Pen, Pit and fissure sealant, Topical fluoride gel, Oral health education.