ACTA SCIENTIFIC DENTAL SCIENCES (ISSN: 2581-4893)

Volume 3 Issue 10 October 2019

Research Article

Pit and Fissure Sealant Awareness Among Parents, Teachers and Extent of its Usage Among Dental Practitioners

Athira Aravindan[1], Chandru TP[2], Faizal C Peedikayil[3]*, Soni Kottayi[4] and Dhanesh Narasimhan[5]

[1]*PG Trainee, Department of Pedodontics, Kannur Dental College, Kannur, Kerala, India*

[2]*Professor, Department of Pedodontics, Kannur Dental College, Kannur, Kerala, India*

[3]*Professor And Head, Department of Pedodontics, Kannur Dental College, Kannur, Kerala, India*

[4]*Reader, Department of Pedodontics, Kannur Dental College, Kannur, Kerala, India*

[5]*Department Of Pedodontics, Kannur Dental College, Kannur, Kerala, India*

***Corresponding Author:** Faizal C Peedikayil, 3Professor And Head, Department of Pedodontics, Kannur Dental College, Kannur, Kerala, India.

Received: August 23, 2019; **Published:** September 27, 2019

DOI: 10.31080/ASDS.2019.03.0654

Abstract

Background: Pit and fissure sealants are one of the most effective preventive treatment for dental caries in children. Knowledge of prophylactic treatments like sealants among parents and teachers play major role in prevention of dental caries.

Objectives: To assess the awareness of sealants among parents and teachers of the participating children and to assess the extent of sealant use among private dental practitioners. The study also assess the presence of sealants in the study population.

Methodology: 949 school children aged 6 - 14 years were selected from 20 different schools. The children were selected using multistage sampling technique. Closed ended questionnaires were provided to all participant children parents. Similar questionnaires were also provided to the 274 teachers working in the selected schools. The responses from these questionnaires were used to assess the awareness and knowledge of parents and teachers regarding pit and fissure sealants.

120 private dental practitioners practicing in Kannur district were also provided with questionnaires to assess their knowledge and attitude regarding pit and fissure sealants and also to assess the extent of use of sealants in their practice.

The results obtained from the survey was tabulated and statistically analyzed using chi square test.

Results: The results showed that 2.85% of the examined children had pit and fissure sealants in their oral cavity. Out of the 857 parents only 8.63% of them reported prior knowledge about sealants.

Among the 274 teachers surveyed 15.7% of teachers reported prior knowledge about sealants.

Among the 120 private clinicians who participated almost 25% reported that they use dental sealants in their practice.

Interpretation and conclusion: The present study revealed that the awareness of pit and fissure sealants among parents and teachers is low and the frequency of sealant use by private practitioners was also noted to be low.

Keywords: Pit and Fissures; Sealants; Dental Caries

Introduction

Dental caries is considered as an important public health problem of widespread occurrence. It is the most prevalent oral disease which causes damage to tooth and is also responsible for several morbid conditions of oral cavity and other systems of body [1,2]. However over the last three decades there has been a substantial improvement in the oral health of children as evidenced by declines in prevalence and severity of dental decay [3].

The age old concept of "prevention is better than cure" rose from the human psyche of trying to prevent any calamity from occurring. This has been implemented in a high regard in the medical field with the concept of vaccines, diet control, lifestyle choices and regular medical screenings. In dentistry agents and methods of primary prevention include-community fluoridated water supply, professional fluoride application, pit and fissure sealants, plaque control and dietary analysis [2,3].

Pit and fissure sealants can be used effectively as a part of a comprehensive approach of both primary caries prevention as well as secondary preventive approach in early non carious cavitated lesions. Sealants have a long history of being documented as a safe and effective mode of caries prevention and are known to potentially reduce 80 - 90% of carious lesions when used in conjugation with fluoride [4,5] Sealing with resin based sealants is a recommended procedure to prevent caries of the occlusal surfaces of permanent molars, particularly among those at high risk of experiencing caries [6].

Out of the many known ways to treat dental caries, the general population is still oblivious to the fact that dental caries is a preventable disease. Hence there is a necessity to spread knowledge about sealants among the general population to increase its use. Knowledge of dental health among parents and teachers play major role in prevention, awareness or early diagnosis of diseases. It is easier for them to spread the knowledge about oral healthcare methods and also to act on them.

Clinicians have a major role in molding the dental attitude of the child which may also reflect on the type of treatment the child receives. Preventive measures like sealants are mostly painless procedures and are preferred by the patients over the conventional methods. This can be hence helpful to establish a positive attitude towards dentistry. However, even today, more than five decades after introduction of pit and fissure sealants in the dental market, the professionals have not embraced the procedure to the extent that available scientific data would expect [7]. It should be taken into consideration that, as dentists it should be our primary concern to educate and guide our patients towards better oral health. Furthermore, it is the duty of every dental surgeon to incorporate preventive measures into their treatment inventory so as to prevent or at least intercept the caries progression in their patients. This mode of treatment can be a major stepping stone towards the concept of painless dentistry or even elimination of fear related to dentistry.

In light to the absence of any prior studies in relation to pit and fissure sealants in Kerala state in India, which has high health and social parameters, it deems important to conduct a study to assess prevalence of pit and fissure sealants in children of age group 6 to14 years, and also to assess awareness of sealants in parents and teachers of the participating children, and also to assess rate of usage of pit and fissure sealants by private dental practitioners and their attitude towards it.

Methodology

This study is divided into 3 parts 1) the prevalence of pit and fissure sealants in children, 2) awareness of parents and teachers about pit and fissures 3) assess the use of pit and fissures by private dental practitioners 949 children in the age group between 6 - 14 years was selected using multistage sampling technique. Selection of schools are done from lower and upper primary schools spreading over 4 geographic zones of Kannur district: North, South, East and West. Five schools were randomly selected from each of these 4 zones, thus comprising of a total of 20 schools. The parents of these children were also part of this study. The teachers selected for the study are from 20 schools and private dental practitioners practicing in Kannur district The duration of study was 1 year.

Before the commencement of the study, the purpose and procedure of study was explained and necessary consent was obtained from the district education officer, relevant school authorities and participants parents.

Ethical clearance was obtained from the institution review board.

The study samples consisted of 4 groups

Group1 - 900 schoolchildren of age group 6 - 14 years Study was conducted to check prevalence of pit and fissure sealants among children of 6 - 14 years age, by investigating the oral cavity for presence or absence of sealants. They will be examined in their respective schools under natural daylight.

Group2-Parents of the children examined in the study

The parents of the examined children were provided with closed ended questionnaire to assess their knowledge about oral health and their awareness about sealants. Sample size was 900 to be equivalent to number of children participating. The questionnaire was given to the parents via children or directly during parent teacher association meetings as per convenience.

Group3-Teachers of the participant children

Distribution of questionnaire to assess the knowledge of teachers of participant children about oral health, preventive measures and awareness about sealants were done. The sample size was 300.

Group4-Private dental practitioners who are practicing in Kannur district

Questionnaire aided interview of 100 private practitioners who are practicing in Kannur district was conducted so as to assess their attitude and extend of sealant usage in their practice.

All questionnaires were provided in English and Malayalam languages. The complete questionnaires were coded and analyzed. The results were tabulated and expressed as both number and percentage. Statistical analysis was done using chi-square test to determine significant difference between different groups if any. The software SPSS (Statistical Package for Social Sciences) Version 20.1 (Chicago, USA Inc.) was used to analyze the data

Results

The sealant status of the children examined during the study are given in table 1. Of the. 949 children examined during the only 27 children were observed to have pit and fissure sealants in their oral cavity which accounts for a 2.85% of the study population.

Out of the 857 parents who participated in the study only 8.63% reported to having prior knowledge about sealants as shown in table 2, In regards to Table 3 assesses the knowledge of teachers regarding sealants. Among the 274 teachers who participated it could be noticed that only 15.70% had prior information on sealants.

Study shows that the number of clinicians using pit and fissure sealants in their practice is only 25% as shown in table 4 The reasons for not using sealants in practice are shown in table 7.18.88% of the dentists complained about the difficulty to establish a fair fee. for the procedure whereas 18.88% reported unfamiliarity with the procedure.

Age	No. studied	+	-
	N (%)	N (%)	N (%)
		sealant present	sealant absent
6	123	1(0.81)	122(99.18)
7	103	-	103(100)
8	115	5(4.34)	110(95.65)
9	68	3(4.41)	65(95.58)
10	75	7(9.33)	68(90.66)
11	89	7(7.86)	82(92.13)
12	67	4(5.90)	63(94.02)
13	175	-	175(100)
14	134	-	134(100)
Total	949	27(2.85)	922(97.15)

Table 1: Age and Sealant Status Of School Children Examined

Caries prevention methods	Distribution of parents (n=857)		
	Important	Not important	Don't know
	N (%)	N (%)	N (%)
Regular use of fluoride tooth paste	153(17.85)	12(1.40)	692(80.75)
Regular use of fluoride mouthwash	53(6.18)	50(5.83)	754(87.99)
Professional fluoride application	112(13.07)	16(1.87)	729(85.06)
Drinking fluoridated water	21(2.45)	72(8.40)	764(89.15)
Using fluoride tablets	37(4.32)	104(12.13)	716(83.55)
Regular tooth brushing	803(93.70)	15(1.75)	39(4.55)
Regular flossing	79(9.22)	42(4.90)	736(85.88)
Professional cleaning	93(10.85)	63(7.35)	701(81.80)
Filling decayed tooth	211(24.62)	27(3.15)	619(72.23)
Applying pit and fissure sealants	76(8.87)	12(1.40)	769(89.73)

Table 2: B. Parents knowledge of caries prevention measures.

	No.	Percentage
Yes	74	8.63
No	783	91.37

Table 3: Parental Knowledge Regarding Sealants.

Caries prevention methods	Distribution of teachers (n=274)		
	Effective	Not effective	Don't know
	N (%)	N (%)	N (%)
Regular dental visits	103(37.59)	75(27.37)	96(35.04)
Daily flossing	23(8.39)	14(5.11)	237(86.50)
Brushing with fluoride toothpaste	153(55.84)	5(1.82)	79(28.83)
Professional fluoride application	32(11.68)	15(5.47)	227(82.85)
Placing pit and fissure sealants	35(12.77)	17(6.20)	222(81.03)
Drinking fluoridated water	14(5.11)	9(3.28)	251(91.61)
Fluoride mouth rinse	54(19.70)	11(4.01)	209(76.29)
Fluoride tablets	11(4.01)	15(5.47)	248(90.51)
Regular brushing	213(77.74)	5(1.82)	56(20.43)

Table 4: Caries prevention knowledge among parents.

	Number	Percentage
Yes	43	15.70
No	231	84.30

Table 5: Teacher's Knowledge Regarding Sealants.

	Number	Percentage
Users	30	25
Non users	90	75

Table 6: dentists Usage of sealants.

Reason	Number	Percentage
Patients have difficulty understanding value	6	6.66
Unfamiliar with procedure	17	18.88
Unsuitable by research	3	3.33
Not long lasting	10	11.11
Hard to establish fair fee	31	34.44
Meticulous technique/no proper guidelines	4	4.44
not enough pediatric patients	5	5.55
Patient unwilling to pay	11	12.22
Other reasons	3	3.33

Table 7: Reason For Not Using Sealants In Practice (N= 90).

Discussion

Literature review shows that occlusal surface of the posterior teeth tend to become carious within 10 years of its eruption into the oral cavity [8]. This cannot be countered by the use of fluorides which could curb mostly smooth surface caries [9]. Sealants were first marketed in February 1971 by Nuva-Seal as a clinical benefit to Bunocore's work and has been well documented in the past 4 decades of its use as a very effective method of caries prevention in the pits and fissures [10-12].

In 1984 the national institute of health also concluded a symposium on sealants by emphasizing on their underutilization and recommending additional research to ascertain the reasons for this underuse. However, despite the extensive scientific evidence supporting efficiency and safety of sealant use in dentistry the acceptance of sealants into the treatment regime of the dental professionals is very low. 13 This recommendation was followed by a multitude of researches utilizing surveys to document the attitude of pediatric dentists and general dentists towards sealant utilization. Furthermore, any method for promotion of benefits of preventive agents must compulsorily include public education. Most accurate method to improve oral health practices and awareness among children would be to give accurate information to the parent and educate them about the variables in case of not proceeding with the treatment. As the child's primary source of information, it is ideal to impart knowledge to parents [14-16].

The educational institutions, especially those bequeath primary education, have a great potential for influencing a child in period of growth as well as his adult life, as this stage of life is where the child imbibes knowledge from his surroundings and establishes his own habits. Health education in schools can be initially conducted by teachers as information is imparted to all students in their care equally [17-20].

The present study showed that only 2.85 percent had the presence of sealants in their permanent posterior teeth. This result shows a prevalence which is relatively low in comparison to other studies conducted around the globe. In the NIDCR survey of 1999 - 2004 conducted in The United States of America, a prevalence of 30% was noticed for sealants. In relation to the public health reports in 2010 by Dye and Thornton-Evans, for The Healthy People it was noted that around 21% of the 8 year old population of the united states had sealants placed in their mouth. In a similar study by Oulis., *et al*. in 2011,on Greek teens with an age range of 13 - 15 years showed that an average of 8% of the population had at least one tooth sealed, whereas a 2015 study by Veiga., *et al*. in Portugal showed the presence of 58.8% of the study population having sealant placed in at least one of their teeth. Perceived reasons for this low utilization of sealants observed in our study maybe due to low utilization of dental services, lack of public knowledge regarding sealants and cost effectiveness [20-24].

Compiling the results obtained from the present study it can be easily shown that the parental knowledge about sealants is low, which in turn signifies the low level of sealant awareness among the general public. The low level of sealant knowledge in the general public maybe due to the lower level of dental awareness and education among the people or the lesser frequency of dental visits [25-27]. This irregular dental visits may also cause a scenario whereas the clinician cannot explain or promote the aspects of prevention of caries. may also be due to conditions were the patient reports to the dental office after the commencement of caries whereas sealant use cannot be implemented. In general, the present survey asserts that the parents were poorly informed about caries prevention methods. The participants of the present study confirms on the general public's thought scenario were regular brushing plays the key role in caries prevention. A few asserted on use of fluoride products and mouthwashes but most in general were oblivious to use of pit and fissure sealants or dental floss. This affirms the lack of public knowledge of preventive measures like sealants or alternative fluoride sources.

The present study however shows that only 15.7% of the teachers were aware of pit and fissure sealants before the commencement of this study. This is also similar to the study by Lang P., *et al*. [17], where he notes that the teachers awareness on fluorides and sealants were low and that the teachers have fragmentary knowledge about the reasons for oral hygiene, effective caries preventive agents. This general ignorance among the educators can be a barrier in the route of mass information being passed on to the generations. Increasing the oral health knowledge of teachers, provide an opportunity to educate an important segment of the general public, which in turn can access a large portion of the population mainly in the younger generation. Educating teachers can be mutually beneficial for the dental professionals too as the propagation of information to larger masses becomes possible [28,29].

It can be duly noted that educating teachers and general public regarding preventive measures have proven useful in case of Essential Package of Oral Health Care in Tanzania which includes prevention of oral diseases through provision of oral health education in primary schools, at the Reproductive and Child Health Clinics (RCH) [30].

In the present study it was noticed that only 25% of the participant clinicians reported using pit and fissure sealants in their practice. This is very less in comparison to the studies conducted all over the world. Studies by Govindaiah and Bhoopathi in 2014 [31], conducted in Florida states that almost all interviewed clinicians used pit and fissure sealants in their practice. In as study conducted in Bhatinda India, 62.8% of practitioners in a study use sealants as a preventive method even if not very often [32]. In a study conducted in the Chennai suburbs, it was noticed that a very low number of clinicians contemplated use of sealants despite adequate

knowledge [33]. This is similar to multiple studies conducted in the 1980 - 2000 time period in different parts of the world, were it was noted that only one third of the practitioners used pit and fissure sealants [7,34-36]. In the present study assessing the non-users, majority reported that it was hard to establish a fair fee for the sealant application.

Taking into consideration the dentists difficulty in setting a feasible cost for the material and also the reduced acceptance of sealants by the child's guardians, the need for increasing public awareness about sealants comes to light. The increase of demand for sealants from the patient's perspective can in turn boost to the number of clinicians using sealants. Thus the burden returns to the clinician's shoulders to spread awareness about sealants among the masses. Also clinicians must take up refreshing their knowledge regarding sealant application so as to overcome the procedural problems mentioned by many.

Conclusion

The benefits of Pit and fissure sealants are not reaching the masses as the study shows the presence of sealants and in the subjects are low. The awareness of the beneficial effects of pit and fissure sealants among parents and teachers is very low and the dentists preventive practice has to be given importance

The recommendations include efforts like:

1. More attention to be directed towards identification and assessment of risk factors for dental caries and the use of pit and fissure sealants and prevent commencement of caries.
2. Educate parents and teachers comprehensively about relative benefits of preventive methods.
3. Improve efforts in professional group levels to motivate practitioners to reach underprivileged population where the disease is more prevalent.
4. Clinicians must take up the duty of educating the normal masses in concerns of various modes of prevention.

Bibliography

1. Demirci M., *et al.* "Prevalence of caries on individual tooth surfaces and its distribution by age and gender in university clinic patients". *European Journal of Dentistry* 4.3 (2010): 270-279.
2. Hujoel P. "Dietary Carbohydrates and Dental-Systemic Diseases". *Journal of Dental Research* 88.6 (2009): 490- 502.
3. Lagerweij MD and Van loveren C. "Declining Caries Trends: Are We Satisfied?". *Current Oral Health Reports* 2.4 (2015): 212-217.
4. Khanna R., *et al.* "Morphology of pits and fissures review through scanning electron microscopedentistry". *Dentistry* 5 (2015): 287.
5. Ahovuo-Saloranta A., *et al.* "Pit and fissure sealants for preventing dental decay in the permanent teeth of children and adolescents". *Cochrane Database Systematic Reviews* 3 (2017): CD001830.
6. Beauchamp J., *et al.* "Evidence-based clinical recommendations for the use of pit-and-fissure sealants: a report of the American Dental Association Council on Scientific Affairs". *Dental Clinics of North America* 53.1 (2009): 131-147.
7. Nagappan N., *et al.* "Knowledge, value, opinion and practice about usage of pit and fissure sealant among dental professionals in Chennai, Tamil Nadu, India". *Journal of International Society of Preventive and Community Dentistry* 5.2 (2015): S123-S128.
8. Cho J and Kim DK. "Study on the shape and depth of the occlusal central fissure in permanent molar teeth". *Taehan Chikkwa Uisa Hyophoe Chi* 27.10 (1989): 959-964.
9. Prabhakar AR., *et al.* "Fluoride: Is It Worth to be added in Pit and Fissure Sealants?". *International Journal of Clinical Pediatric Dentistry* 5.1 (2012):1-5.
10. Simonsen RJ. "Pit and fissure sealant: review of the literature". *Pediatric Dentistry* 24.5 (2002): 393-414.
11. Mejaàre I., *et al.* "Caries-preventive effect of fissure sealants: a systematic review". *Acta Odontologica Scandinavica* 61 (2003): 321-330.
12. Condò R., *et al.* "Sealants in dentistry: a systematic review of the literature". *Oral and Implantology* 6.3 (2013): 67-74.
13. San Martin L., *et al.* "Dental sealant knowledge, opinion, value and practice of Spanish dentists". *BMC Oral Health* 13.12 (2013):1-8.
14. O'Niell HW. "Opinion study comparing attitudes about dental health". *Journal of the American Dental Association* 109 (1984): 910-915.
15. Eklund SA and Ismail AI. "Time of development of occlusal and proximal lesions: implications for fissure sealants". *Journal of Public Health Dentistry* 46 (1986): 114-121.
16. HassallD C and MellorA C. "The sealant restoration: indications, success and clinical technique". *British Dental Journal* 191 (2001): 358-362.
17. Lang P., *et al.* "Oral health knowledge and attitude of elementary school teachers in Michigan". *Journal of Public Health Dentistry* 49.1 (1989): 44-50.

18. Gooch BF., *et al.* "Preventing dental caries through school-based sealant programs: updated recommendations and reviews of evidence". *Journal of the American Dental Association* 140.11 (2009):1356-1365.

19. Feigal RJ and Donly KJ. "The use of pit and fissure sealants". *Pediatric Dentistry* 28.2 (2006): 143-150.

20. Cherry-Peppers G., *et al.* "Sealant use and dental utilization in U.S. children". *ASDC Journal of Dentistry for Children* 62.4 (1995): 250-255.

21. Veiga NJ., *et al.* "Prevalence of dental caries and fissure sealants in a Portuguese sample of adolescents". *PLoS One* 10.3 (2015): e0121299.

22. Kumaran P. "Clinical evaluation of the retention of different pit and fissure sealants: a 1-year study". *International Journal of Clinical Pediatric Dentistry* 6.3 (2013):183-187.

23. Bhushan U and Goswami M. "Evaluation of retention of pit and fissure sealants placed with and without air abrasion pretreatment in 6-8 year old children - An in vivo study". *Journal of Clinical and Experimental Dentistry* 9.2 (2017): e211-e217.

24. Oulis CJ., *et al.* "Prevalence of sealants in relation to dental caries on the permanent molars of 12 and 15-year-old Greek adolescents. A national pathfinder survey". *BMC Public Health* 11 (2011):100.

25. Alshehri A and Nasim VS. "Infant Oral Health Care Knowledge and Awareness among Parents in Abha City of Aseer Region, Saudi Arabia". *The Saudi Journal for Dental Research* 6 (2015): 98-101.

26. Poutanen R., *et al.* "Oral health-related knowledge, attitudes, behavior, and family characteristics among Finnish schoolchildren with and without active initial caries lesion". *Acta Odontologica Scandinavica* 65 (2007): 87-96.

27. Peres M., *et al.* "The relation between family socioeconomic trajectories from childhood to adolescence and dental caries and associated oral behaviors". *Journal of Epidemiology and Community Health* 61 (2007):141-145.

28. Sekhar V., *et al.* "Knowledge, attitude and practice of school teachers towards oral health in Pondicherry". *Journal of Clinical and Diagnostic Research* 8.8 (2014): ZC12-ZC15.

29. Prabhadevi., *et al.* "Knowledge, Attitudes, and Practices of School Teachers toward Oral Health in Davangere, India". *International Journal of Clinical Pediatric Dentistry* 10.1 (2017): 89-95.

30. Carneiro L., *et al.* "Oral health knowledge and practices of secondary school students, tanga, Tanzania". *International Journal of Dentistry* (2011): 806258.

31. Govindaiah S and Bhoopathi V. "Dentists' levels of evidence-based clinical knowledge and attitudes about using pit-and-fissure sealants". *Journal of the American Dental Association* 145 (2014): 849-855.

32. Asawa K., *et al.* "Dental sealants: Knowledge, value, opinion, and practice among dental professionals of Bathinda city, India". *Advances in Preventive Medicine* (2014): 469738.

33. Sutharshana V., *et al.* "Knowledge Attitude and Practice of Dentists Regarding Pit and Fissure Sealants in Suburbs of Chennai, India". *Research and Reviews* 4.3 (2016).

34. San Martin L., *et al.* "Dental sealant knowledge, opinion, values and practice of Spanish dentists". *BMC Oral Health* 13 (2013): 12.

35. Al-Maweri SA., *et al.* "Fissure sealants: Knowledge and practice of Yemeni dental practitioners". *European Journal of Dentistry* 10.2 (2016): 234-238.

36. Sushanth V., *et al.* "Assessment of knowledge, attitude, and practice regarding preventive options in oral care among dentists in Davangere city, Karnataka: A cross-sectional study". *Dentistry and Medical Research* 3.1 (2015): 20-25.

Volume 3 Issue 10 October 2019