

Knowledge and Material of Choice for Pedodontic Restoration by Undergraduate - A Questionnaire Survey

Aishwariya .P .S¹, M. Mohamed Jubair Hashir²

Saveetha Dental College, Chennai, India

Abstract: Background: Restoration of decayed primary teeth is important and significant for proper maintenance of child health and also for development of permanent teeth. Composite, glass ionomer, amalgam, compomer, resin modified glass ionomer cement, stainless steel crown are materials preferred for restoration. It is important for undergraduate to have knowledge about materials and its uses which makes durability of restoration longer. Aim: The aim of the study is to assess the knowledge and material used by undergraduate for pedodontic restoration. Materials and Methods: A questionnaire was designed to obtain information about knowledge, materials of choice by dental students for pedodontic restoration. A questionnaire of 10 question based on different materials is issued to dental students. The sample (n=100) comprised of 30 third year student, 30 final year student and 40 intern. The obtained data were extracted, tabulated and interpreted.

Keywords: knowledge, restorative material

1. Introduction

Alterations in dental restorative patterns combined with the introduction of new and improved restorative materials and techniques affect the efficacy of longevity of dental restorations. [1] Marked changes in the use of restorative materials have occurred during the past 10 to 20 years. [2,3] Alleged adverse health effects and environmental concerns due to the release of mercury gave rise to controversial discussions about the use of amalgam as a contemporary restorative material. [3,4] Microleakage is the most common cause of failure of almost all restorative materials since it is a major contributing factor to secondary caries and pulpal irritation. [5-7] Accordingly, there is an interest in finding a restorative material which has better bond characteristics, thus minimizing micro leakage and reducing the potential for caries development at the tooth surface interface and resultant pulpal irritation. The choice of the best restorative material becomes even more difficult as the desired survival period for a restoration ideally coincides with the time of primary tooth exfoliation, a maximum of 8 to 9 years.

Recently, there has been an expansion in the range of tooth-coloured materials available for restoring primary and young mixed dentitions. In addition to amalgam and stainless steel crowns, improved conventional glass ionomer cements and composite resins, resin-modified glass ionomer cements and polyacrylic acid modified composites (compomers) have become available. [8-10]

2. Materials and Methods

A questionnaire was designed to obtain information about knowledge and material of choice among dental students. The study population comprised of clinical dental students from a dental school in Chennai, India. A total of 100 clinical students were randomly selected for this questionnaire survey. The survey was conducted in July

2016. Self-administered questionnaire of about 10 questions were distributed, and all participants were given information on survey distribution as well as the number and type of questions, topics covered and the assurance that the anonymity would be maintained. The questionnaire addressed the following topics: materials used commonly, material with more success rate, other material preferred for restoration. The sample (n=100) comprised of 30 third year students, 30 final year students and 40 interns. Questionnaire that consist of multiple-choice and open-ended questions. The collected data is analysed & entered in the Microsoft excel and the result is represented in percentage as in bar chart.

3. Result

This study revealed more than 80% of dental students chose GIC as material of choice for restoring molar, 10% chose compomers, 5% chose composite and amalgam. More than 70% of dental students have knowledge about the material they use. More than 60% suggest resin modified GIC is material with more success rate.

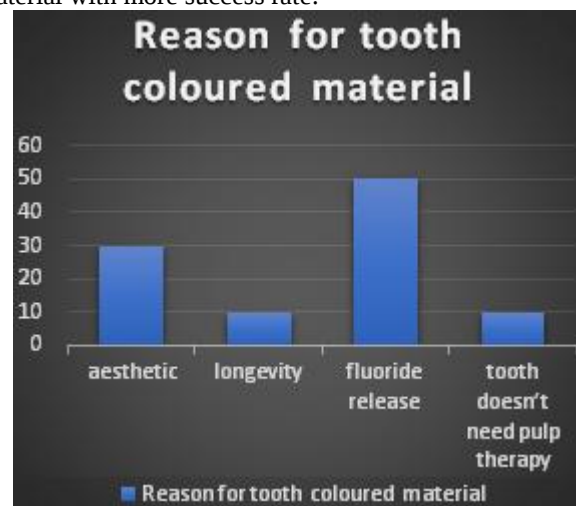


Figure 1

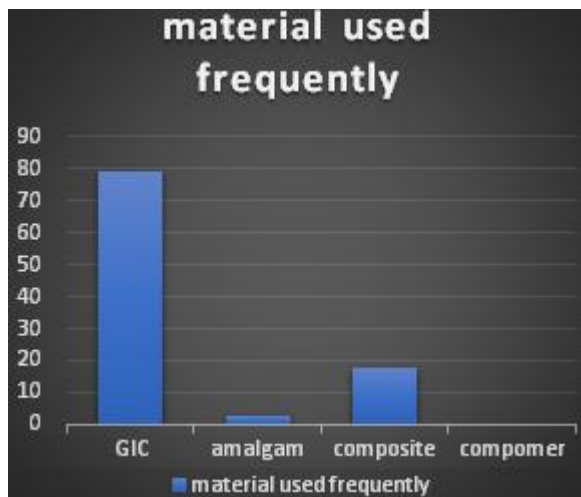


Figure 2

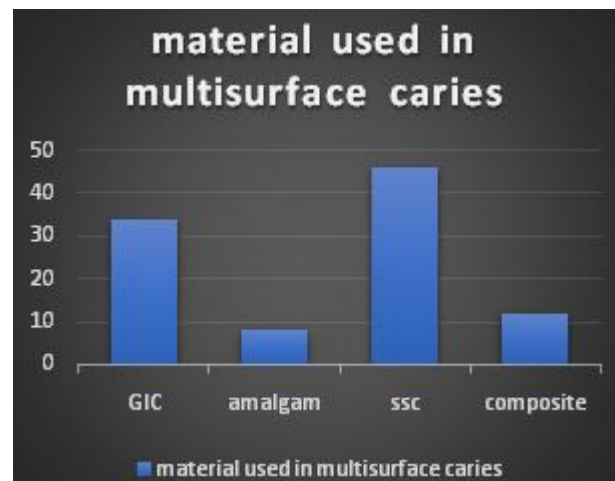


Figure 5

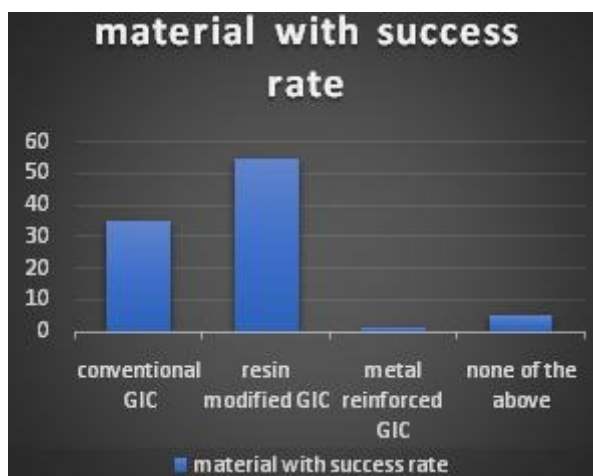


Figure 3

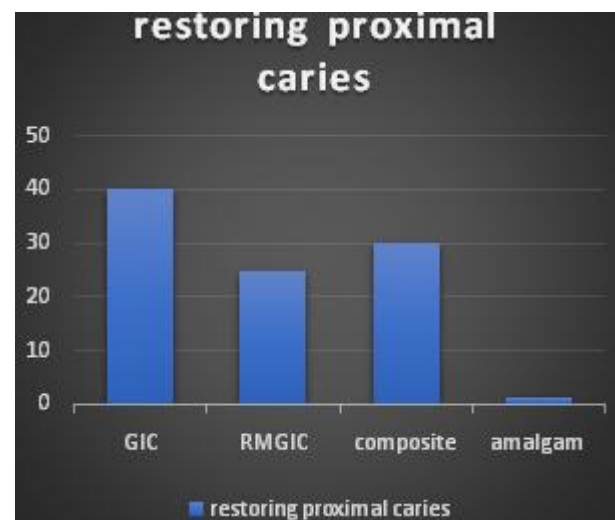


Figure 6

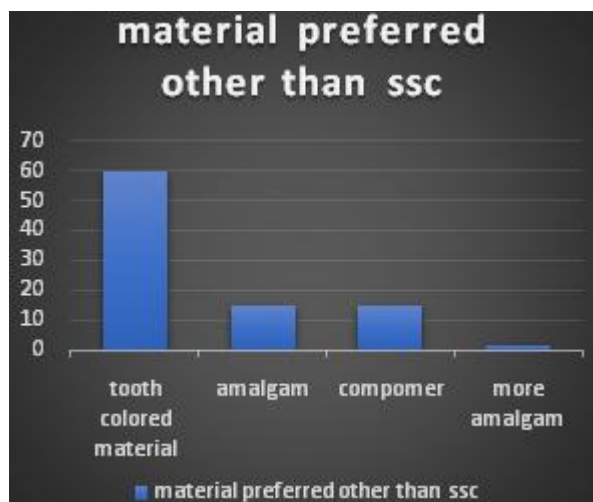


Figure 4

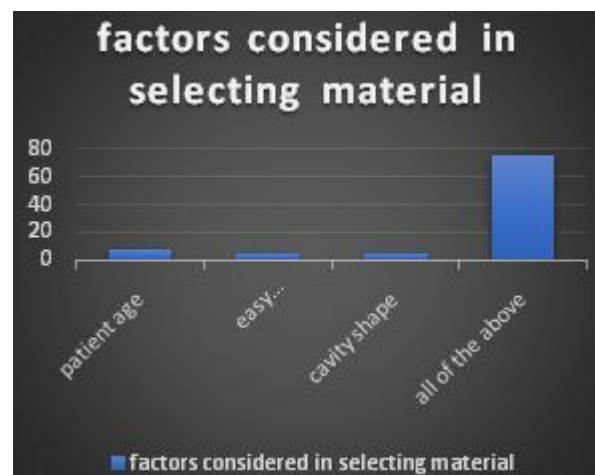


Figure 7

4. Discussion

The purpose of this study is to know about the knowledge of the dental students in selecting materials for restoring primary molar. As there are many materials available. Primary molar restoration is very important as it need to be good esthetically as well as for mastication. This study is conducted in the private dental college in Chennai. In this study third year, final year and intern were included. A

Questionnaire with 10 question is been distributed to undergraduate dental students. Question is based on material frequently used, material with more success rate, important factor considered in selecting material. Many study has been conducted in the past years regarding material of choice, longevity of materials.

According to study conducted in Finland reported that glass ionomer cement is used predominant material in children younger than 17 and 47% used in permanent restoration [11]. Most two-common restorative material used is compomers and glass ionomer cement reported in study conducted in 1998 Sweden [12]. A Norwegian study in 2002 reported that 80% of restoration in tooth colored material. [13] A Questionnaire based study conducted in US paediatric dentist in 2002 reported resin based material used frequently for classI and classII. [14] A UK study of clinician's case notes from 1999 reported 61% of primary first molar and 55% of primary second molar are restored with glass ionomer cement. [15]

In this study, also students frequently use GIC than resin modified GIC. This does not accord with recent literature stating that conventional GIC is not used in primary molar because of its low tensile strength and poor long term performance [16-20]. Conversely, resin modified GIC is suggested to be material with success and preferred next to amalgam.

Figure 1: Based On Materials Frequently Used: According to recent study materials used frequently is GIC and compomers. In this study also respondents chose GIC (79%) , composite (18%), amalgam(2%). No one chose compomers but it is suggested to be material used frequently in primary molar.

Figure 2: Based On Reason For Use Of Tooth Coloured Restoration: Aesthetic is main reason for the use tooth coloured material and fluoride release is next reason. In this study respondent chose fluoride(30%)as main reason for the use of tooth colored material, aesthetic(30%), longevity and tooth doesn't need pulp therapy(10%). It doesn't accord with recent literature stating aesthetic as primary factor for the use of tooth coloured material.

Figure 3: Material With Success Rate: Resin modified GIC is believed to be material with success rate. In this study, also respondent chose resin modified GIC (55%), next conventional GIC (35%) and next metal reinforced GIC (5%). It does accord with recent literature stating resin modified GIC is material with success rate and preferred next to amalgam.

Figure 4: Material Used In Multisurface Caries: SSC is used in multisurface caries. In this study also respondent chose SSC(46%), next GIC(34%), composite(12%), amalgam(8%). A case study published in 1988 reported that stainless steel crown is twice strong than amalgam in multisurface caries. Recent literature still consider stainless steel crown is durable restoration for primary dentition.

Figure 5: Based On Material Preferred Than SSC: Mostly preferred material other than SSC is tooth colored

material as it release fluoride and longevity. In this study, also respondent chose more tooth coloured material (50%), amalgam (15%), compomers (15%).

Figure 6: Based On Restoring Proximal Caries: GIC is material mostly preferred for proximal caries. In this study, also respondent prefer GIC (40%), RMGIC (25%), composite (30%), amalgam (5%). It doesn't accord with literature stating GIC is not used because of its low tensile strength and poor long term performance. But still respondent prefer GIC for proximal caries.

Figure 7: Based On Factors to Consider In Material Selection: Patient age and cooperation of child, easy manipulation and durability of material, cavity shape, size all factors are to be considered while selecting a material for posterior molar restoration. In study also respondent chose all of the above (75%), cavity shape(5%), easy manipulation(5%), patient age (15%).

- 1) Which restorative material do you use most frequently in primary molar?
 - A. GIC C. Amalgam
 - B. Composite D. compomer
- 2) What is the most important factor you consider to select the material for posterior teeth in primary dentition?
 - a) Patient age and co operation of child
 - b) Easy manipulation and durability of material
 - c) Cavity shape, size
 - d) All of the above
- 3) Main reason for use of tooth coloured material for posterior primary teeth.
 - a) Aesthetic superior to amalgam
 - b) Fluoride release
 - c) Longevity as good as amalgam
 - d) Tooth does not need pulp therapy
- 4) A clinical scenario of six year old child with occlusal lesion into dentin on mandibular primary second molar, material of choice?
 - a) A.GIC
 - b) RMGIC
 - c) composite
 - d) amalgam
 - e) ssc
- 5) The longevity of conventional GIC in primary molar are mostly?
 - a) A.5 yrs
 - b) 2 yrs
 - c) 3 yrs
 - d) 10 yrs
- 6) 6. which material has got more efficacy and success rate in primary molar?
 - a) Conventional GIC
 - b) Metal reinforced GIC
 - c) Resin modified GIC
 - d) None of the above

- 7) Pattern of usage of dental restorative material other than SSC?
 - a) Amalgam only
 - b) More amalgam than tooth colored material
 - c) More tooth colored material than amalgam
 - d) Compomers only.
- 8) Material of choice for restoring primary molars with multisurface carious lesion
 - a) GIC
 - b) Amalgam
 - c) SSC
 - d) Composite
- 9) Rrestoring proximal lesion in primary molars is better with
 - a) Composite
 - b) RMGIC
 - c) GIC
 - d) Amalgam
- 10)10. contra indication of SSC?
 - a) Teeth close to exfoliation
 - b) When more than half the roots resorbed
 - c) With known nickel allergy
 - d) All of the above.

5. Conclusion

Based on the questionnaire responses, tooth-coloured materials were the most popular choices forrestorations of the primary dentition; use of amalgam and stainless steel crowns was low. Glassionomer cement was the most popular tooth-coloured material chosen and it is followed by compomers. Recently, glass ionomer (GI) cement has been suggested as a suitable material for primary tooth restoration, but very few controlled clinical studies have tested this suggestion. Resin modified GIC is more caries preventive than composite which is also used more vividly.

References

- [1] Mjör IA. The reasons for replacement and the age of failed restorationsin general dental practice. *Acta Odontol Scand* 1997; 55: 58-63.
- [2] Mjör IA. Selection of restorative materials in general dental practice inSweden. *Acta Odontol Scand*1997; 55: 53-57.
- [3] Hickel R, Dasch W, Janda R, Tyas M, Anusavice K. New directrestorative materials. *Int Dent J* 1998; 48: 3-16.
- [4] Roulet JF. Benefits and disadvantages of tooth-coloured alternatives toamalgam. *J Dent* 1997; 25: 459-473.
- [5] Bergenholtz G, Cox CF, Loeshe WJ, et al. Bacterial leakage around dental restorations: its effect on the dental pulp. *J Oral Pathol* 11:439-450, 1982.
- [6] Eriksen HM, Pears G. In vitro Caries related to marginal leakage around composite resin restorations. *J Oral Rehab* 5:15-20, 1978.
- [7] Brannstrom M. Communication between the oral environment and the dental pulp associated with restorative treatment. *Oper Dent* 9:57-68, 1984.
- [8] Berg JH. The continuum of restorative materials in pediatric dentistry—a review for the clinician. *Pediatr Dent* 1998;20:93-100.
- [9] Fleming GJP, Burke FJT, Watson DJ, Owen FJ. Materials forrestoration of primary teeth: I. Conventional materials and earlyglass ionomers. *Dent Update* 2001;28:486-491.
- [10]Fleming GJP, Burke FJT, Watson DJ, Owen FJ. Materials forrestoration of primary teeth: II. Glass ionomer derivatives andcompomers. *Dent Update* 2002;29:10-17.
- [11]Forss H, Widstrom E. Factors influencing the selection of restorative materials in dental care in Finland. *J Dent*1996;24:257-262.
- [12]Wendt L, Koch G, Birkhed D. Replacements of restorations in the primary and young permanent dentition. *Swed Dent J* 1998;22:149-155.
- [13]Mjor OA, Dahl JE, Moorhead JE. Placement and replacement of restorations in primary teeth. *Acta Odontol Scand* 2002;60:25-28.
- [14]Guelmann M, Mjor IA. Materials and techniques for restoration of primary molars by pediatric dentists in Florida. *Pediatr Dent*2002;24:326-331.
- [15]Milsom KM, Tickle M, Blinkhorn A. The prescription and relative outcomes of different materials used in general dentalpractice in the northwest region of England to restore theprimary dentition. *J Dent* 2002;30:77-82.
- [16]Fleming GJP, Burke FJT, Watson DJ, Owen FJ. Materials for restoration of primary teeth: I. Conventional materials and earlyglass ionomers. *Dent Update* 2001;28:486-491.
- [17]Croll TP, Nicholson JW. Glass ionomer cements in pediatric dentistry: review of the literature. *Pediatr Dent* 2002;24:423-429.
- [18]Welbury RR, Shaw AJ, Murray JJ, Gordon PH, McCabe JF.Clinical evaluation of paired compomer and glass ionomerrestorations in primary molars: final results after 42 months. *BrDent J* 2000;189:93-97.
- [19] Qvist V, Laurberg, Poulsen A, Teglers PT. Longevity and cariostatic effects of everyday conventional glass-ionomer andamalgam restorations in primary teeth: three-year results. *J DentRes* 1997;76:1387-1396.
- [20]Cho SY, Cheng AC. A review of glass ionomer restorations in the primary dentition. *J Can Dent Assoc* 1999;65:491-495.