Journal of Contemporary Issues in Business and Government Vol. 26, No. 2, 2020
https://cibg.org.au/

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2020.26.02.018

Evaluation of preference of interim cements used for provisional restorations in fixed dental prosthesis - a retrospective study

NEPPALA GOWTHAM[1], NABEEL AHMED[2]*

[1]Saveetha Dental College And Hospitals, Saveetha Institute Of Medical And Technical Sciences, Saveetha University, Chennai-600077, Tamilnadu, India
[2]Senior Lecturer, Department Of Prosthodontics And Implantology, Saveetha Dental College And Hospitals, Saveetha Institute Of Medical And Technical Sciences, Saveetha University, Chennai-600077, Tamil Nadu, India
*Corresponding Author
Email ID: 151909001.sdc@saveetha.com[1], nabeeln.sdc@saveetha.com

Abstract: Provisional or temporary cements play an important role in Fixed prosthodontics. There are numerous types of temporary cements, mainly used temporary materials are eugenol-based, non-eugenol based, and resin based. The aim of this retrospective cross-sectional study was to assess the preferred type of provisional cements used in temporization of fixed prosthesis. A cross-sectional, descriptive study was conducted in a university, on randomly selected individuals. The study group consists of adult patients who attended the outpatient Department of Prosthodontics from June 2019-March 2020. 86,000 case sheets were reviewed and sampling was done using simple random sampling. Descriptive analysis and chi square test is done in SPSS software version 23.0 by IBM to evaluate the correlation between age and profession with the type of provisional cement used. In 71.9% of the cases zinc oxide eugenol was prefered for temporary cementation. Association of graduation level and choice of temporary cement showed statistical significance(p - 0.00, $p<0.05$). We conclude that Zinc Oxide Eugenol was preferred for temporary cementation of provisional restorations, followed by Temp bond and IRM. Most of the postgraduates prefered IRM for temporary cementation of provisional restorations.

Keywords: Eugenol, IRM, TempBond, Temporary crowns, Zinc Oxide innovative tecchnique

INTRODUCTION

Provisional or temporary cements play an important role in Fixed prosthodontics. They are used for the cementation of temporary crowns, fixed partial dentures (FPDs), CAD-CAM milled Temporaries, Implant crowns as well as for temporary cementation of definitive restorations of the same types. There are numerous types of temporary cements, mainly used temporary materials are eugenol-based, non-eugenol based, and resin based. The newest form of temporary cements in dentistry is glass ionomer. There are several criteria that are important when selecting a temporary cement. Although there may not be a single cement that is ideal for every clinical situation.(Ariga *et al.*, 2018);(Jyothi *et al.*, 2017)

There are important features that must be included while selecting a Temporary cement is According to Farah and powers -2005 Ideal temporarily cement should exhibit Easy removal of excess cement from the margins,Good marginal seal to minimise the sensitivity,Good retention but easy removal of temporary prosthesis,Low solubility in Oral Fluids(Kannan and Venugopalan, 2018) and compatibility with provisional resin restorations,Resin core materials, Bonding agents and permanent cements.(Albert and El-Mowafy, 2005);(Duraisamy, Krishnan, Ramasubramanian, Sampathkumar, Mariappan and Sivaprakasam, 2019)

Some of the earliest provisional cements were made from zinc-oxide powder and eugenol liquid. Wallace showed a formula for a predictable zinc-oxide eugenol temporary cement in 1933(Doray, Li and Powers, 2001)Eugenol is known to have a sedative effect on the pulp(Selvan and Ganapathy, 2016).One problem with eugenol-containing cements is that they inhibit the setting reaction of acrylic resins by inhibiting free radical polymerization in the resins used for provisional restorations, and they soften acrylic resins.(Gegauff and Rosenstiel, 1987);(Selvan and Ganapathy, 2016)

Many manufacturers have introduced eugenol-free cements to address the problem. These cements tend to be a bit more rigid and retain the restoration better and the cleanup is much easier.

Most clinicians will use more than one type of provisional cement. If maximum retention is needed, a resin-based cement may be the material of choice. The problem with some of the resin-based cements is they may bond to composite core materials(Venugopalan *et al.*, 2014). This may cause the build-ups to be removed from the tooth when the provisional is removed. If Vaseline is used, this may inhibit the final set of the definitive cement.

It also prevent microleakage from the provisional restoration and also prevents sensitivity from cold and hot stimuli till the final prosthesis is arrived.It has adequate strength and also with stand the masticatory load

Woody and Davis 1992 suggested that poor dentin bond strength is seen after temporary cementation; it may be the result from the presence of cement remnants not from just eugenol.(Woody and Davis, 1992). There are numerous studies that assess the different Physical and Chemical properties of different Provisional cements. There are few studies regarding Clinical use of different provisional cements.

Many studies which involved case reports (Ashok *et al.*, 2014),surveys(Ashok and Suvitha, 2016a), systematic reviews (Ganapathy, Kannan and Venugopalan, 2017),(Ganapathy, Kannan and Venugopalan, 2017; Ariga *et al.*, 2018),(Kannan and Venugopalan, 2018), literature reviews (Venugopalan *et al.*, 2014),(Vijayalakshmi and Ganapathy, 2016),(Subasree, Murthykumar and Dhanraj, 2016; Vijayalakshmi and Ganapathy, 2016),(Selvan and Ganapathy, 2016). In Vivo studies, (Jyothi *et al.*, 2017),(Jain, Ranganathan and Ganapathy, 2017),(Duraisamy, Krishnan, Ramasubramanian, Sampathkumar, Mariappan and Navarasampatti Sivaprakasam, 2019). In vitro studies (Ganapathy *et al.*, 2016),(Ajay *et al.*, 2017)and retrospective studies(Basha, Ganapathy and Venugopalan, 2018)were carried out by our team previously. We are currently focusing on epidemiological studies.

Our department is passionate about research we have published numerous high quality articles in this domain over the past years (Abraham *et al.*, 2005; Devaki, Sathivel and BalajiRaghavendran, 2009; Neelakantan *et al.*, 2010, 2015; Arja *et al.*, 2013; Ramshankar *et al.*, 2014; Sumathi *et al.*, 2014; Surapaneni and Jainu, 2014; Surapaneni, Priya and Mallika, 2014; Ramamoorthi, Nivedhitha and Divyanand, 2015; Manivannan *et al.*, 2017; Ezhilarasan, 2018; Ezhilarasan, Sokal and Najimi, 2018; J *et al.*, 2018; Ravindiran and Praveenkumar, 2018; Malli Sureshbabu *et al.*, 2019; Mehta *et al.*, 2019; Krishnaswamy *et al.*, 2020; Samuel, Acharya and Rao, 2020; Sathish and Karthick, 2020)

This study aims to assess the preferred type of Provisional cements used in temporization of fixed prosthesis.

MATERIALS AND METHODS:

Study Setting: The study was conducted with the approval of the Institutional Ethics Committee [SDC/SIHEC/2020/DIASDATA/0619-0320]. The study consisted of one reviewer, one assessor and one guide .

Study Design: The study was designed to include all dental patients of the ages 18-65 years who are undergoing treatment for fixed prosthesis. The patients who did not fall into this inclusion criteria were excluded.

Sampling Technique: The study was based on a non probability consecutive sampling method. To minimise sampling bias, all case sheets of patients who are undergoing treatment for fixed prosthesis were reviewed and included.The internal and external validity of the sample selected and all the samples are selected based on a simple random sample.

Data Collection and Tabulation: Data Collection was done using the patient database with the timeframe work 01 June 2019 and 31 march 2020. About 997 case sheets were reviewed and those fitting under the inclusion criteria were included. Cross verification of data for errors and measures are taken to minimise sampling bias all data were included.The inclusion criteria was all the patients who are undergoing fixed prosthesis treatment. The exclusion criteria was patients with systemic illness. Data was downloaded from DIAS and imported to Excel, Tabulation was done. The values were tabulated and analysed.

Statistical Analysis: Descriptive statistics was used to evaluate preference of interim cements used for provisional restorations in fixed prosthodontics.Chi-Square test was performed and the p value was determined to evaluate the significance of the variables it was used to evaluate.The correlation between gender and profession with type of interim cement were evaluated and statistics were carried using SPSS Software version 23.0 by IBM. The results were obtained in the form of graphs and tables.

RESULTS AND DISCUSSION

A total of 996 reports are assessed and in the present study 71.9% of them preferred Zinc Oxide Eugenol for interim restoration and 15.2% of them preferred Tempbond and 12.8 % of them preferred IRM (Table 1).The study results show that the correlation between Gender and level of study with Type of Temporary cement preferred has p value .000 (p-value<0.05) and .000 (p-value<0.05) respectively making them significant statistically (Table 2)

The provisional restoration protects the tooth by minimizing extreme changes in temperature of food and beverages ingested, and the cement provides a seal against microleakage for the period of time that the provisional restoration will be in place.(Mash *et al.*, 1991);(Mash *et al.*, 1991; Pan *et al.*, 2006);(Subasree, Murthykumar and Dhanraj, 2016)

Provisional cements were opaque in color because of the materials being used. Recently, more tooth-colored provisional cements have been introduced to not interfere with the color evaluation of translucent restoration materials(Basha, Ganapathy and Venugopalan, 2018). Examples of color neutral, shaded, or translucent provisional materials include

ZONE (DUX Dental, Oxnard, CA), NexTempTM (Premier Dental Products, PlymouthMeeting, PA), TempBond® Clear (Kerr Corporation, Orange, CA), and Systemp.link (Ivoclar Vivadent, Amherst, NY).
When a FPD has been provisionally cemented, after removal and reevaluation, it is not unusual for some modifications and adjustments to be made where the pontic is contacting the ridge. In some cases, as in a patient who relates a history of dentinal hypersensitivity after tooth preparation and provisional restoration placement, the definitive restoration may be temporarily cemented to assess pulpal health. In these cases, the use of a eugenol-containing provisional cement may have a sedative effect on the pulp.(Pashley, Tao and Pashley, 1988; Mash *et al.*, 1991; Pan *et al.*, 2006);(Jain, Ranganathan and Ganapathy, 2017)
Use of a Eugenol containing provisional cement is the negative effects the eugenol has on dental resins. These cements, if there is residual eugenol remaining after setting, can act as a plasticizer of dental resins, with their greatest effects on acrylic resins, resulting in softening of the resin with a decrease in physical properties.(Vijayalakshmi and Ganapathy, 2016)
(Gegauff and Rosenstiel, 1987);(Millstein and Nathanson, 1983).With the newer eugenol-containing provisional cements, the amount of unreacted eugenol can be minimized by using the correct proportions recommended by the manufacturer
Once the provisional restoration has been adapted, finished, and polished, it is ready for cementation. To avoid leaving a white streak of provisional cement around the margins of the restoration and to facilitate the removal of excess provisional cement, the polished surfaces of the provisional restoration can be lightly painted using a disposable brush with a petroleum gel.Using petroleum gel on the tissue-surface side of a pontic and cervical to the connector of a FPD provisional also makes set temporary cement easier to remove(Ganapathy, Kannan and Venugopalan, 2017). A problem area when removing provisional cement is the gingival embrasure below the contact area. Just flossing the contact will often not allow for cement removal. Gross cement can be easily removed after the complete set of the cement with a scaler.For teeth with large gingival embrasures, there are times when the cement is more difficult to remove from the embrasure spaces. For these cases, tying two to three knots into the end of dental floss will allow the larger knotted area to pull out the set cement.It is critical that all residual temporary cement be removed(Ajay *et al.*, 2017). Excess cement remaining in the sulcus can result in irritation of the periodontium and, in the most extreme cases, result in severe periodontal inflammation with the potential for bone loss(Millstein and Nathanson, 1983; Schwedhelm and Ricardo Schwedhelm, 2006)
While there is no one provisional cement that meets all the requirements of an ideal product, the current generation of provisional cements offers a number of advantages over what has been used in the past. If a practitioner is having success with a provisional cement, there is no reason to make a change(Ashok and Suvitha, 2016b). However, if the practice has expanded the types of restorations to include all ceramic and implants, there may be a need for more than one brand of provisional cements. The advantages of a more rigid setting provisional cement may be necessary for a number of clinical situations, including a crown with compromised retention or a patient with parafunctional habits(Ashok *et al.*, 2014). If there are issues with postoperative sensitivity, a desensitizing may solve these problems.
provisional cement containing eugenol or a eugenol-free provisional cement with additives for

Limitations:
From the study we have compared only 3 provisional restoration like Zinc Oxide Eugenol,IRM and Tempbond. There are so many brands available Now-a-days.Choosing the Material of choice depends mainly on clinician judgment and type of Temporisation material used and how much time required for the final prosthesis coming from the lab

CONCLUSION
From the above study we conclude that Zinc Oxide Eugenol was preferred for temporary cementation of provisional restorations and FPD, followed by the use of Temp bond and IRM for cementation. Most of the postgraduates prefered using IRM as a temporary cement. There is no one provisional cement to meet all clinical needs. It may be necessary to have at least two different provisional cements to accommodate the dental practice.

AUTHOR CONTRIBUTIONS:
First author (Neppala gowtham) performed the analysis and interpretation and wrote the manuscript. Second author (Nabeel Ahmed) contributed to conception, data design, analysis, interpretation and critically revised manuscript. Both authors have discussed results and revised the manuscript.

Conflict of interest: Nil

REFERENCES:
1. Abraham, S. *et al.* (2005) 'Evaluation of the inhibitory effect of triphala on PMN-type matrix metalloproteinase (MMP-9)', *Journal of periodontology*, 76(4), pp. 497–502.
2. Ajay, R. *et al.* (2017) 'Effect of surface modifications on the retention of cement-retained implant crowns under fatigue loads: An In vitro study', *Journal of Pharmacy And Bioallied Sciences*, p. 154. doi:

10.4103/jpbs.jpbs_146_17.
3. Albert, F. E. and El-Mowafy, O. M. (2005) 'Marginal adaptation and microleakage of Procera AllCeram crowns with four cements', *The Journal of Prosthetic Dentistry*, p. 394. doi: 10.1016/j.prosdent.2005.02.008.
4. Ariga, P. *et al.* (2018) 'Determination of Correlation of Width of Maxillary Anterior Teeth using Extraoral and Intraoral Factors in Indian Population: A Systematic Review', *World Journal of Dentistry*, pp. 68–75. doi: 10.5005/jp-journals-10015-1509.
5. Arja, C. *et al.* (2013) 'Oxidative stress and antioxidant enzyme activity in South Indian male smokers with chronic obstructive pulmonary disease', *Respirology* , 18(7), pp. 1069–1075.
6. Ashok, V. *et al.* (2014) 'Lip Bumper Prosthesis for an Acromegaly Patient: A Clinical Report', *The Journal of Indian Prosthodontic Society*, pp. 279–282. doi: 10.1007/s13191-013-0339-6.
7. Ashok, V. and Suvitha, S. (2016a) 'Awareness of all ceramic restoration in rural population', *Research Journal of Pharmacy and Technology*, 9(10), pp. 1691–1693.
8. Ashok, V. and Suvitha, S. (2016b) 'Awareness of all ceramic restoration in rural population', *Research Journal of Pharmacy and Technology*, p. 1691. doi: 10.5958/0974-360x.2016.00340.1.
9. Basha, F. Y. S., Ganapathy, D. and Venugopalan, S. (2018) 'Oral Hygiene Status among Pregnant Women', *Research Journal of Pharmacy and Technology*, p. 3099. doi: 10.5958/0974-360x.2018.00569.3.
10. Devaki, T., Sathivel, A. and BalajiRaghavendran, H. R. (2009) 'Stabilization of mitochondrial and microsomal function by polysaccharide of Ulva lactuca on D-Galactosamine induced hepatitis in rats', *Chemico-biological interactions*, 177(2), pp. 83–88.
11. Doray, P. G., Li, D. and Powers, J. M. (2001) 'Color stability of provisional restorative materials after accelerated aging', *Journal of Prosthodontics*, pp. 212–216. doi: 10.1053/jpro.2001.27560.
12. Duraisamy, R., Krishnan, C. S., Ramasubramanian, H., Sampathkumar, J., Mariappan, S. and Sivaprakasam, A. N. (2019) 'Compatibility of Nonoriginal Abutments With Implants', *Implant Dentistry*, pp. 289–295. doi: 10.1097/id.0000000000000885.
13. Duraisamy, R., Krishnan, C. S., Ramasubramanian, H., Sampathkumar, J., Mariappan, S. and Navarasampatti Sivaprakasam, A. (2019) 'Compatibility of Nonoriginal Abutments With Implants: Evaluation of Microgap at the Implant-Abutment Interface, With Original and Nonoriginal Abutments', *Implant dentistry*, 28(3), pp. 289–295.
14. Ezhilarasan, D. (2018) 'Oxidative stress is bane in chronic liver diseases: Clinical and experimental perspective', *Arab journal of gastroenterology: the official publication of the Pan-Arab Association of Gastroenterology*, 19(2), pp. 56–64.
15. Ezhilarasan, D., Sokal, E. and Najimi, M. (2018) 'Hepatic fibrosis: It is time to go with hepatic stellate cell-specific therapeutic targets', *Hepatobiliary & pancreatic diseases international: HBPD INT*, 17(3), pp. 192–197.
16. Ganapathy, D. *et al.* (2016) 'Effect of Resin Bonded Luting Agents Influencing Marginal Discrepancy in All Ceramic Complete Veneer Crowns', *Journal of clinical and diagnostic research: JCDR*, 10(12), pp. ZC67–ZC70.
17. Ganapathy, D. M., Kannan, A. and Venugopalan, S. (2017) 'Effect of Coated Surfaces influencing Screw Loosening in Implants: A Systematic Review and Meta-analysis', *World Journal of Dentistry*, pp. 496–502. doi: 10.5005/jp-journals-10015-1493.
18. Gegauff, A. G. and Rosenstiel, S. F. (1987) 'Effect of provisional luting agents on provisional resin additions', *Quintessence international* , 18(12), pp. 841–845.
19. Jain, A., Ranganathan, H. and Ganapathy, D. (2017) 'Cervical and incisal marginal discrepancy in ceramic laminate veneering materials: A SEM analysis', *Contemporary Clinical Dentistry*, p. 272. doi: 10.4103/ccd.ccd_156_17.
20. J, P. C. *et al.* (2018) 'Prevalence and measurement of anterior loop of the mandibular canal using CBCT: A cross sectional study', *Clinical implant dentistry and related research*, 20(4), pp. 531–534.
21. Jyothi, S. *et al.* (2017) 'Periodontal Health Status of Three Different Groups Wearing Temporary Partial Denture', *Research Journal of Pharmacy and Technology*, p. 4339. doi: 10.5958/0974-360x.2017.00795.8.
22. Kannan, A. and Venugopalan, S. (2018) 'A systematic review on the effect of use of impregnated retraction cords on gingiva', *Research Journal of Pharmacy and Technology*, p. 2121. doi: 10.5958/0974-360x.2018.00393.1.
23. Krishnaswamy, H. *et al.* (2020) 'Investigation of air conditioning temperature variation by modifying the structure of passenger car using computational fluid dynamics', *Thermal Science*, 24(1 Part B), pp. 495–498.
24. Malli Sureshbabu, N. *et al.* (2019) 'Concentrated Growth Factors as an Ingenious Biomaterial in Regeneration of Bony Defects after Periapical Surgery: A Report of Two Cases', *Case reports in dentistry*, 2019, p. 7046203.
25. Manivannan, I. *et al.* (2017) 'Tribological and surface behavior of silicon carbide reinforced aluminum matrix nanocomposite', *Surfaces and Interfaces*, 8, pp. 127–136.
26. Mash, L. K. *et al.* (1991) 'Leakage of various types of luting agents', *The Journal of prosthetic dentistry*,

66(6), pp. 763–766.
27. Mehta, M. *et al.* (2019) 'Oligonucleotide therapy: An emerging focus area for drug delivery in chronic inflammatory respiratory diseases', *Chemico-biological interactions*, 308, pp. 206–215.
28. Millstein, P. L. and Nathanson, D. (1983) 'Effect of eugenol and eugenol cements on cured composite resin', *The Journal of prosthetic dentistry*, 50(2), pp. 211–215.
29. Neelakantan, P. *et al.* (2010) 'Root and Canal Morphology of Mandibular Second Molars in an Indian Population', *Journal of endodontics*, 36(8), pp. 1319–1322.
30. Neelakantan, P. *et al.* (2015) 'Photoactivation of curcumin and sodium hypochlorite to enhance antibiofilm efficacy in root canal dentin', *Photodiagnosis and photodynamic therapy*, 12(1), pp. 108–114.
31. Pan, Y.-H. *et al.* (2006) 'Comparison of 7 luting protocols and their effect on the retention and marginal leakage of a cement-retained dental implant restoration', *The International journal of oral & maxillofacial implants*, 21(4), pp. 587–592.
32. Pashley, E. L., Tao, L. and Pashley, D. H. (1988) 'The sealing properties of temporary filling materials', *The Journal of prosthetic dentistry*, 60(3), pp. 292–297.
33. Ramamoorthi, S., Nivedhitha, M. S. and Divyanand, M. J. (2015) 'Comparative evaluation of postoperative pain after using endodontic needle and EndoActivator during root canal irrigation: A randomised controlled trial', *Australian endodontic journal: the journal of the Australian Society of Endodontology Inc*, 41(2), pp. 78–87.
34. Ramshankar, V. *et al.* (2014) 'Risk stratification of early stage oral tongue cancers based on HPV status and p16 immunoexpression', *Asian Pacific journal of cancer prevention: APJCP*, 15(19), pp. 8351–8359.
35. Ravindiran, M. and Praveenkumar, C. (2018) 'Status review and the future prospects of CZTS based solar cell – A novel approach on the device structure and material modeling for CZTS based photovoltaic device', *Renewable and Sustainable Energy Reviews*, 94, pp. 317–329.
36. Samuel, S. R., Acharya, S. and Rao, J. C. (2020) 'School Interventions-based Prevention of Early-Childhood Caries among 3-5-year-old children from very low socioeconomic status: Two-year randomized trial', *Journal of public health dentistry*, 80(1), pp. 51–60.
37. Sathish, T. and Karthick, S. (2020) 'Wear behaviour analysis on aluminium alloy 7050 with reinforced SiC through taguchi approach', *Journal of Materials Research and Technology*, 9(3), pp. 3481–3487.
38. Schwedhelm, E. R. and Ricardo Schwedhelm, E. (2006) 'Direct Technique for the Fabrication of Acrylic Provisional Restorations', *The Journal of Contemporary Dental Practice*, pp. 157–173. doi: 10.5005/jcdp-7-1-157.
39. Selvan, S. R. and Ganapathy, D. (2016) 'Efficacy of fifth generation cephalosporins against methicillin-resistant Staphylococcus aureus-A review', *Research Journal of Pharmacy and Technology*, p. 1815. doi: 10.5958/0974-360x.2016.00369.3.
40. Subasree, S., Murthykumar, K. and Dhanraj (2016) 'Effect of Aloe Vera in Oral Health-A Review', *Research Journal of Pharmacy and Technology*, p. 609. doi: 10.5958/0974-360x.2016.00116.5.
41. Sumathi, C. *et al.* (2014) 'Production of prodigiosin using tannery fleshing and evaluating its pharmacological effects', *TheScientificWorldJournal*, 2014, p. 290327.
42. Surapaneni, K. M. and Jainu, M. (2014) 'Comparative effect of pioglitazone, quercetin and hydroxy citric acid on the status of lipid peroxidation and antioxidants in experimental non-alcoholic steatohepatitis', *Journal of physiology and pharmacology: an official journal of the Polish Physiological Society*, 65(1), pp. 67–74.
43. Surapaneni, K. M., Priya, V. V. and Mallika, J. (2014) 'Pioglitazone, quercetin and hydroxy citric acid effect on cytochrome P450 2E1 (CYP2E1) enzyme levels in experimentally induced non alcoholic steatohepatitis (NASH)', *European review for medical and pharmacological sciences*, 18(18), pp. 2736–2741.
44. Venugopalan, S. *et al.* (2014) 'Magnetically retained silicone facial prosthesis', *Nigerian journal of clinical practice*, 17(2), pp. 260–264.
45. Vijayalakshmi, B. and Ganapathy, D. (2016) 'Medical management of cellulitis', *Research Journal of Pharmacy and Technology*, p. 2067. doi: 10.5958/0974-360x.2016.00422.4.
46. Woody, T. L. and Davis, R. D. (1992) 'The effect of eugenol-containing and eugenol-free temporary cements on microleakage in resin bonded restorations', *Operative dentistry*, 17(5), pp. 175–180.

Table 1: Frequency distribution of the preference of different types of temporary cements for fixed partial denture. Zinc oxide eugenol was most commonly preferred as temporary cement.

Type of cement	Frequency	Percent
Zinc oxide Eugenol	**717**	**71.9%**
Temp Bond	**152**	**15.2%**
IRM	**128**	**12.8%**
Total	**997**	**100%**

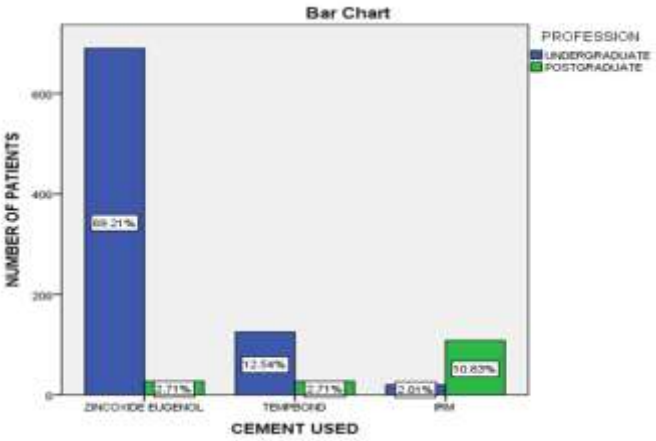

Fig.1: Bar graph depicting the association between different types of temporary cement and level of study, X axis represents different types of provisional cement and Y axis represents number of population. The graph shows Zinc Oxide Eugenol is used more by Undergraduates(blue) and IRM is used more by Postgraduates (green). Chi Square test represents there is statistical association between different types of temporary cement and level of study having p-value - 0.000(p value<0.05) making it statistically significant

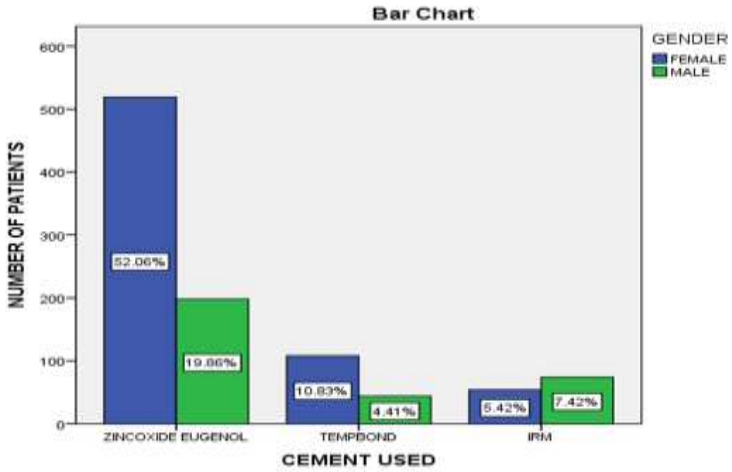

Fig.2: Bar graph depicting the association between different types of temporary cement and gender. X axis represents different types of provisional cement and the Y axis represents number of population. The graph shows that Zinc Oxide Eugenol is used more followed by Tempbond and very less by IRM. Chi Square test represents there is statistical association between different types of temporary cement and gender having p-value - 0.000(p value<0.05) making it statistically significant