

Factors Affecting the Postoperative Sensitivity of Composite Restorations/ Assessment of Knowledge of Dental Students at Riyadh Colleges of Dentistry and Pharmacy

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Abstract

Since the composite restorations are used widely in the era of modern dentistry and the longevity of these restorations are greatly influenced by the clinicians' attitudes regarding the techniques and materials they prefer to use. This study was assessed the knowledge of the dental students at the clinical levels toward the factors that will affect the post-operative sensitivity of composite restorations.

Study Design: Cross sectional study. 150 male and female dental students at their clinical levels. Main outcome measurement: Visual Analogue Scale (VAS) ratings of knowledge assessment of dental students. Undergraduate student should be encouraging to use other restorative materials when indicated as the composite restoration is sensitive technique procedure.

Review of the knowledge about the bonding system and the effect of the defects of each step on the outcome restoration quality should be considered at the pre clinic didactic courses and during the orientation clinical sessions.

Knowledge about the light curing and the polymerization mechanism and shrinkage should be reinforced at the lower undergraduate levels.

Post-operative Sensitivity should not be considering as normal reaction in every composite restoration and when it is there it should be managed in the proper way.

Rubber dam use at the clinic should be seriously and strongly recommended to continue after graduation as much as it is at the undergraduate as the composite become the most popular restorative material at the market.

Keywords: *Postoperative Sensitivity; Composite Restorations; Dental Students; Rubber Dam*

Introduction

Composites have suffered remarkable changes in their composition, which have resulted in significant improvement in materials properties [1]. These materials have become more popular for both anterior and posterior teeth [2]. Posterior composite restoration can have a long lifespan with a low annual failure rate [3]. When dentists perform anterior composite restorations, the selection of materials and equipment, including the type of composite, the type of adhesive system, and the kind of light curing unit, may influence mechanical

properties and ultimately affect clinical performance [1]. Adhesive systems have also undergone significant modifications and currently there is a large range of adhesive systems available to clinicians, including two-step and three-step etch-and-rinse systems and the two-step and one step self-etch systems [4]. The simplification of the technique reduces the possibility of professional error and the total time to perform composite restoration [5]. Some studies have demonstrated that the traditional three-step etch-and-rinse adhesive systems produce better and long lasting restorations [6]. Rubber dam application provides a better control of humidity, making the restorative procedure easier as clinicians do not need to worry about contamination of the operative field [7].

Justification for the Research

Since the composite restorations are used widely in the era of modern dentistry and the longevity of these restorations are greatly influenced by the clinicians' attitudes regarding the techniques and materials they prefer to use.

Aim(s) of the Research

The aim of this study is to assess clinical knowledge of the dental students when restoring teeth with composite restorations. How the level of clinical experience training influence their clinical application of these restorations is also tested.

Materials and Methods

Study design: A cross-sectional study will be performed using a questionnaire.

Study population: Dental Students at their clinical levels at the Riyadh Colleges of Dentistry and Pharmacy.

Sample size: 150 males and females dental students at their clinical levels.

Sample selection: Convenience sampling.

Duration of study: 2 months.

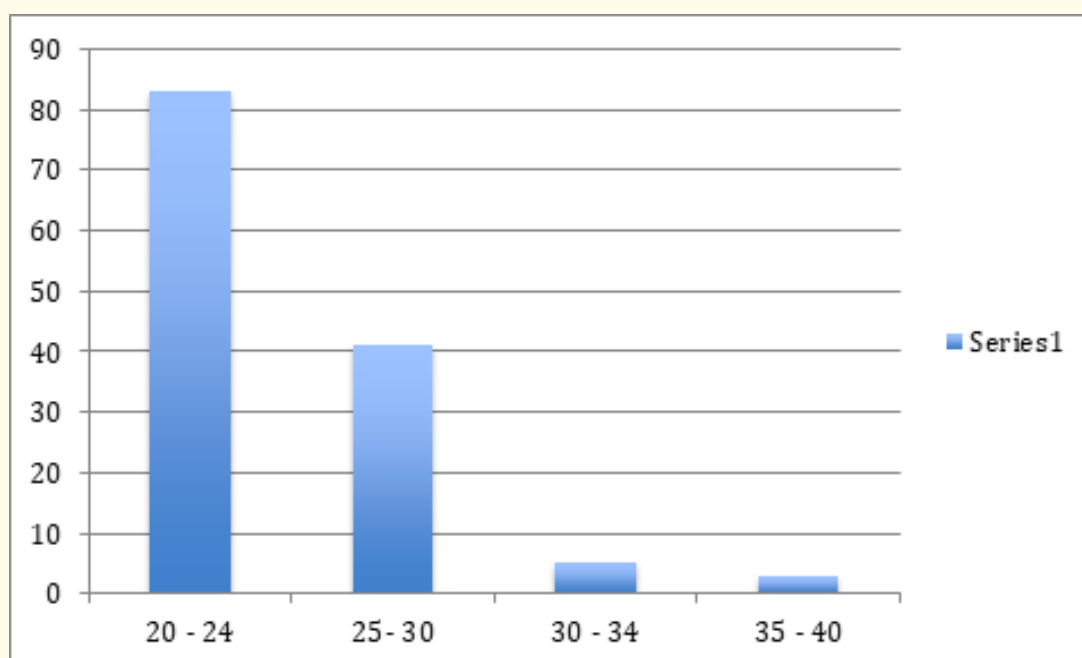
Informed consent will be obtained from the participants before they answer the survey.

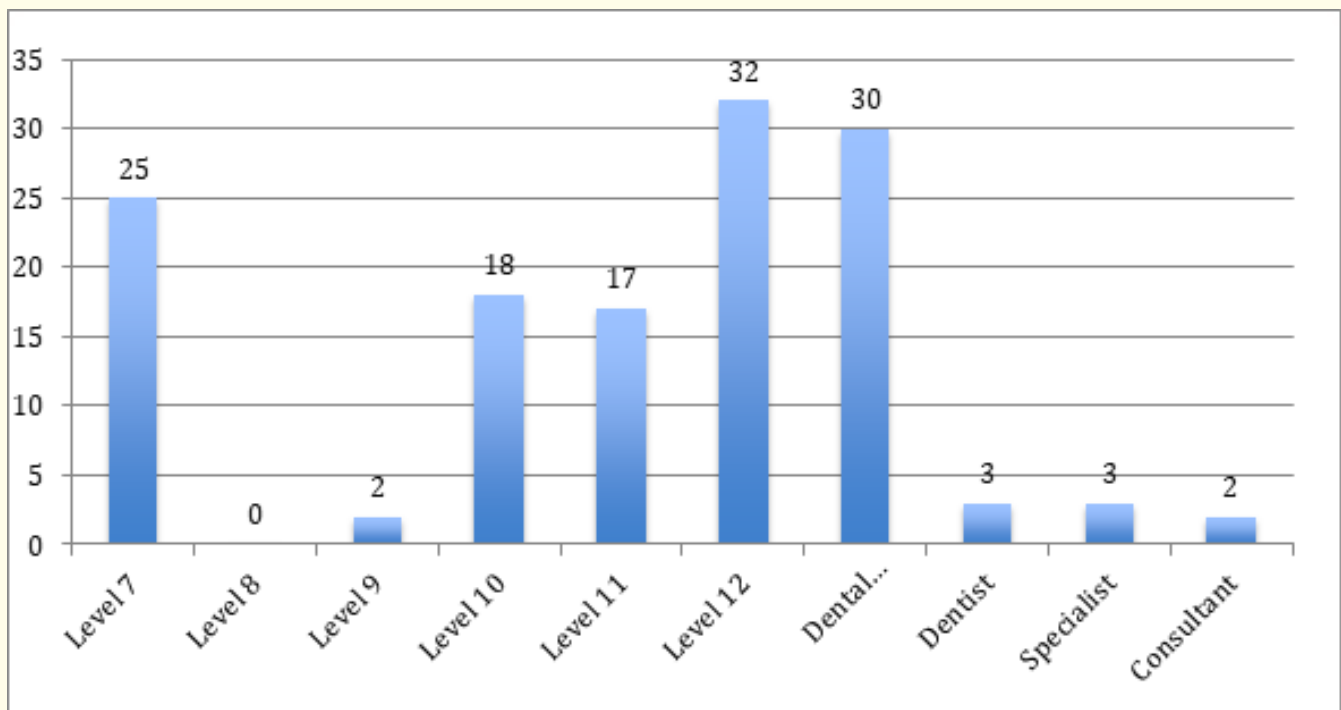
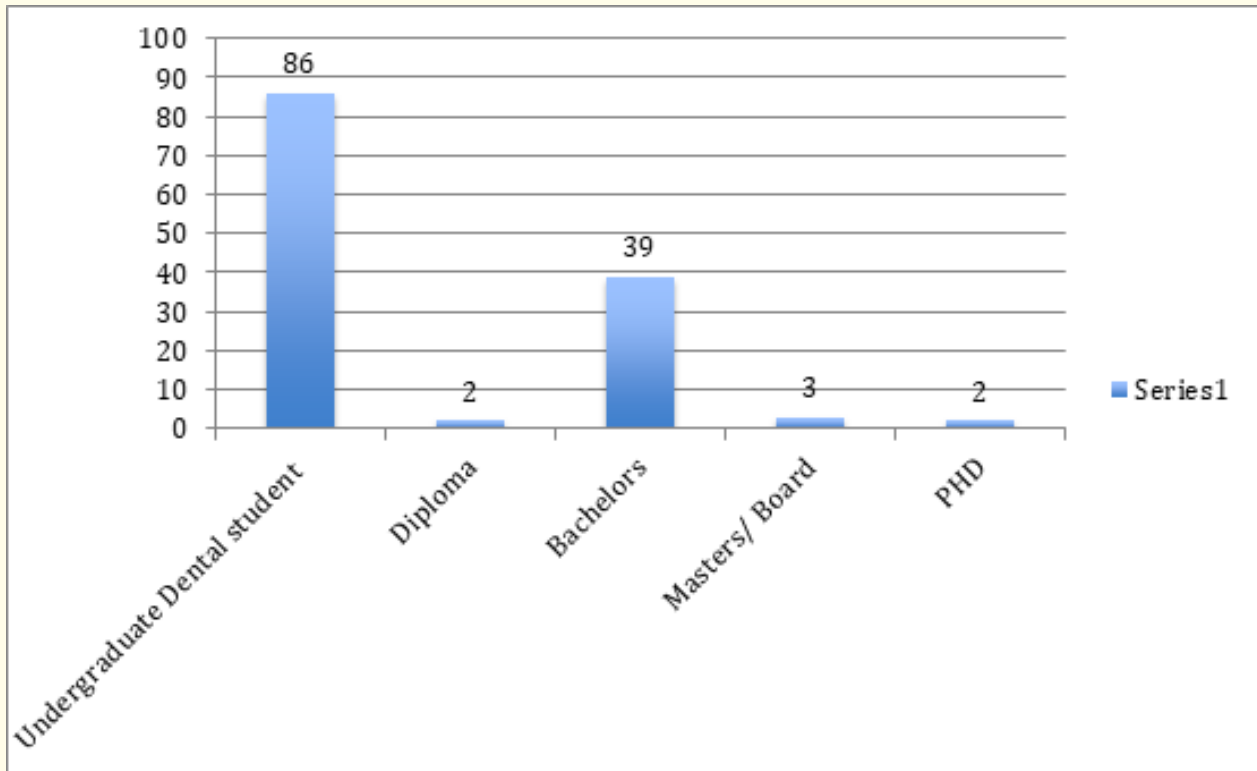
Results

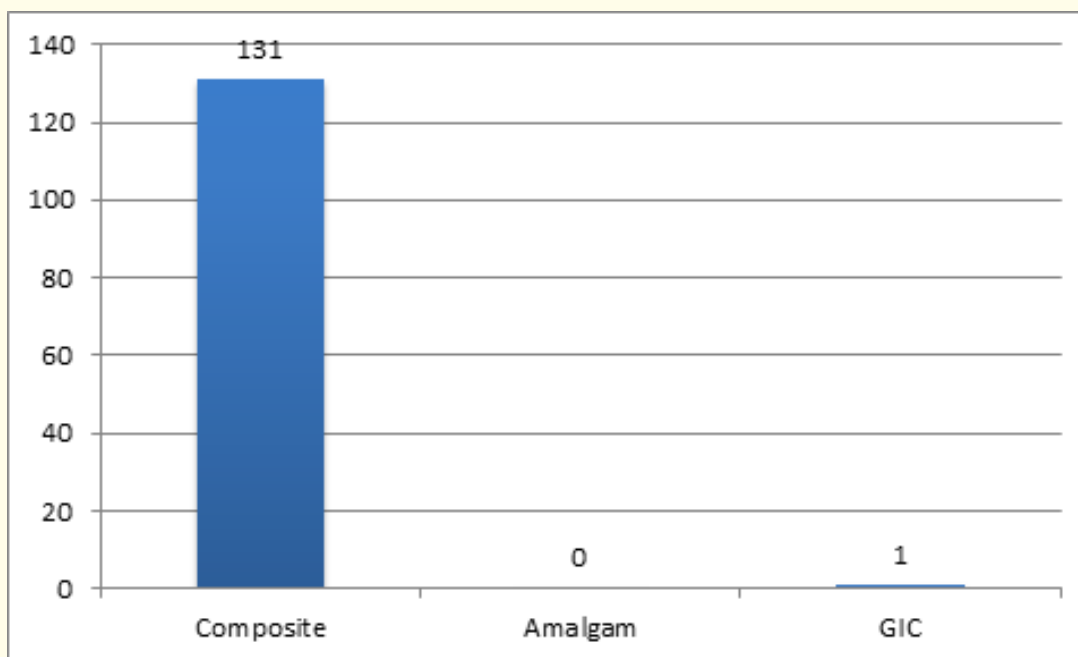
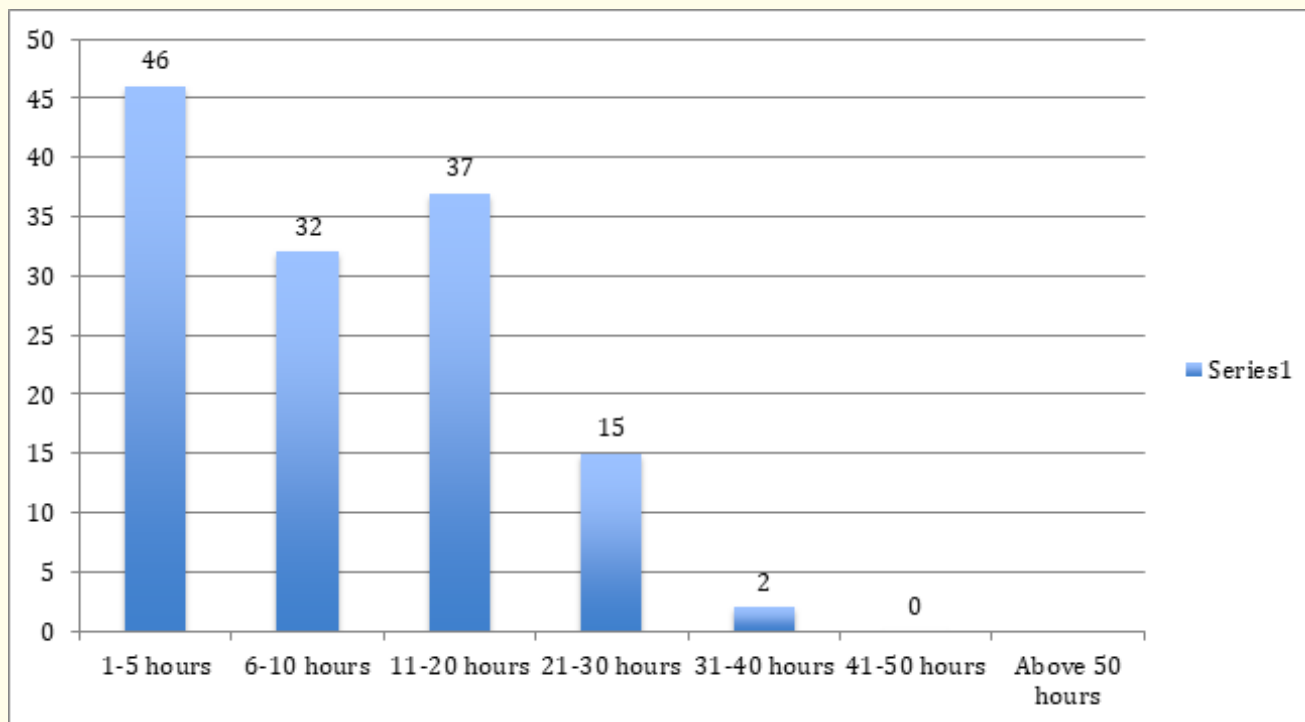
Gender

	Frequency	Percent
Male	111	84.21%
Female	21	15.78%
Total	132	100%

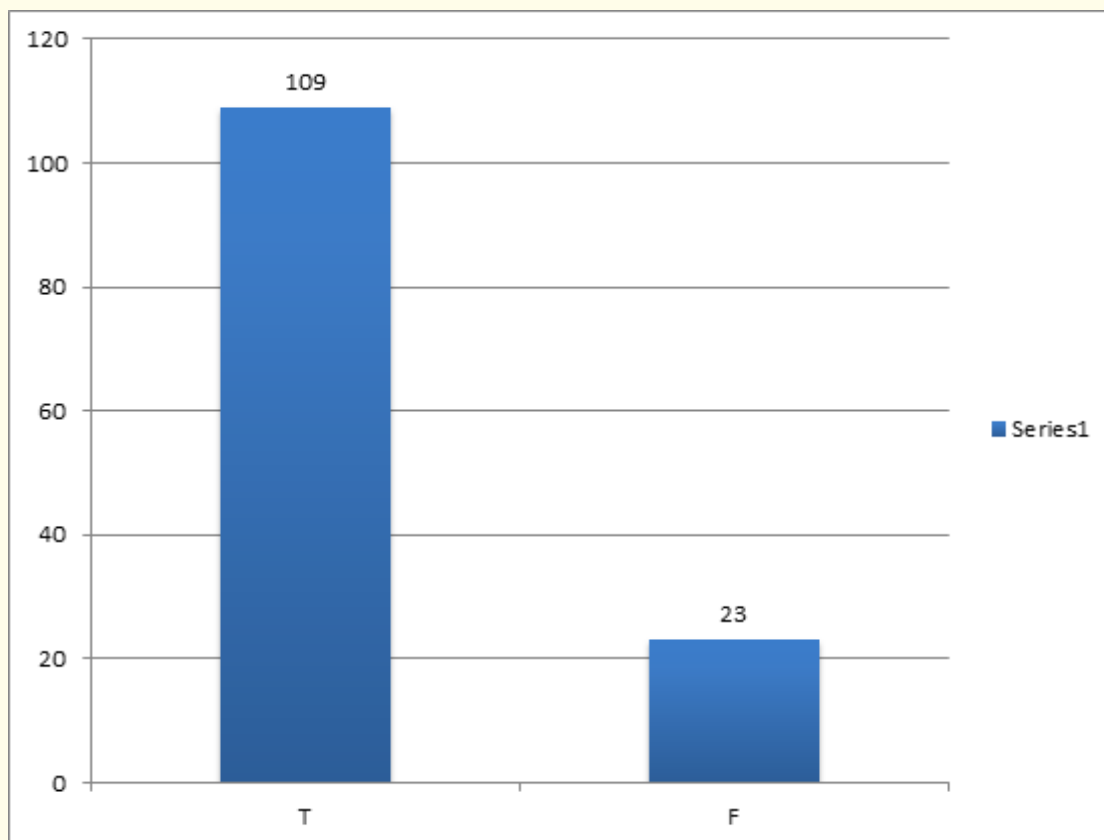
Distribution of results based on student ages.







Formation of hybrid layer is not important for bonding



- Most of the participants were males at the senior clinical levels.
- High percentage of the sample was working in the Riyadh Colleges university hospital.
- High percent of sample 34.84% working 1 - 5h per week.
- High percent of sample 99.24% choose composite as the preferred restorative material while only no one selected the amalgam restoration as the preferred material.
- High percent of sample 78.03% prefer Rubber dam to do their isolation technique.
- High percent of sample 68.18% agreed that the bonding agent should be applied on a moist cavity.
- High percent of sample preferred composite restoration as their restorative material while they had lack of information regarding the formation of the hybrid layer and bonding mechanism.
- High percent of sample had lack of knowledge regarding the cases in which the cavity desiccation is indicated.

- High percent of sample had lack of knowledge regarding the use of gentle air pressure to dry the cavity after acid etching.
- Only few participants had lack of knowledge with the hydrodynamic theory.
- High percent of sample agreed that the isolation technique will affect the postoperative sensitivity of composite restoration.
- High percent of sample agreed that the composite restoration should be always applied in incremental technique while only few were having lack of knowledge with that technique.
- 42.42% of the sample had agreed that the composite restorations are thermal isolative materials that don't require any liner or base.
- 64.39% of the sample prefer acid etching for 15 seconds only.
- Most of the participants agreed that the 1st increment should not connect the buccal wall to the lingual wall.
- Most of the participants agreed that enamel and dentin should be both etched.
- High percentage of the sample agreed that the placement of liner or base depends on the amount of remaining dentin thickness.
- High percentage of the sample agreed that applying the composite restoration as a single increment will result in marginal leakage later on.
- High percentage of the sample agreed that the c-factor should be encountered by careful incremental technique.
- High percentage of the sample had lack of knowledge about the duration of light curing for each increment of composite restorations.
- High percentage of the sample agreed that rubber dam isolation will result in long lasting restorations as compared to other isolation techniques.
- High percentage had lack of knowledge about the cavity surface humidity before the application of the bonding agent.
- High percentage of the sample had agreed that after the application of the bonding agent the use gentle air spray on it is a must.
- High percentage of the sample had lack of knowledge about the beveling of the cavo-surface margins.
- High percentage of the sample agreed that using of proper cooling system during the cavity preparation will result in composite restorations less post-operative sensitivity.
- High percentage of the sample agreed that if the amount of the remaining dentin thickness is 0.5 mm then we need to place a liner only below the composite restoration.
- High percentage of the sample agreed that if the amount of the remaining dentin thickness is 1 mm then we need to place base only below the composite restoration.
- High percentage of the sample agreed that if the amount of the remaining dentin thickness is 2 mm then we should not place a liner below the composite restoration.

- High percentage of the sample had lack of knowledge about the post-operative sensitivity related to cold or hot drinks.
- High percentage of the sample agreed that we should not prescribe pain killer as a treatment for the postoperative.

Summary of the results

99.24% of them choose composite as the preferred restorative material and 78.03% prefer Rubber dam to do their isolation technique and believed this as well as using proper cooling system will affect the postoperative sensitivity and durability of composite restoration, 68.18% agreed that the bonding agent should be applied on a moist and 64.39% prefer acid etching of both enamel and dentin for 15 seconds only ,but they had lack of information regarding the formation of the hybrid layer and bonding mechanism and technique. Few had lack of knowledge with the hydrodynamic theory.

High percentage agreed the c-factor should be encountered by careful incremental technique but had lack of knowledge about curing time and 42% agreed that the composite is thermal isolative materials that don't require any liner or base unless its 1 mm thick. most of the participants agreed pain killer is not the treatment for the postoperative sensitivity.

Discussion

The objective of this survey is to study the Factors affecting the postoperative sensitivity of composite restorations. Out of the 123 questioners only one dentist refused to participate. The questioner was covering multiple factors including the knowledge, the bonding technique, the isolation aids preference, and with least importance the experience as most of the participants were undergraduate students.

The survey was built on what the composite restoration was known with as a technique sensitive material which means every step should be done as the manufacturer recommends and any defect would lead to a failure in the final result.

Recently it was noticed that composite restoration become popular at the market, this study supported this believe as only less than 0.7% choose other materials, but however there was a frequent complaint from post-operative sensitivity we to fiend the most important factor might need to focuses on to overcome this problem.

Although most of sample preferred composite restoration as their restorative material the results of the survey came out with the highest percentages defects were found in the knowledge as they had lack of information regarding the hybrid layer and bonding mechanism, the C-factor effect, the degree of humidity of the dentin needed for bonding.

The beveling importance, or the light curing time of each increment during composite placement.

Most of the participants agreed on the importance of using rubber dam in increasing the durability of the composite restoration - which means reducing the sensitivity - and 78.03% of them prefer to use it ,this is not a significant result as most of the participant are dental student where the use of rubber dam is mandatory.

Management of the expected post-operative sensitivity was not an issue as most of the participants believe in the importance of remaining dentine thickness in the rule of sensitivity and using liners to prevent it however most of them need to understand that the use of analgesics is a temporary palliative management but the sensitivity will not disappear unless the cause was discovered and eliminated.

Conclusions

1. Undergraduate student should be encouraging to use other restorative materials when indicated as the composite restoration is sensitive technique procedure.

2. Review of the knowledge about the bonding system and the effect of the defects of each step on the outcome restoration quality should be considered at the pre clinic didactic courses and during the orientation clinical sessions.
3. Knowledge about the light curing and the polymerization mechanism and shrinkage should be reinforced at the lower undergraduate levels.
4. Post-operative Sensitivity should not be consider as normal reaction in every composite restoration and when it is there it should be managed in the proper way.
5. Rubber dam use at the clinic should be seriously and strongly recommended to continue after graduation as much as it is at the undergraduate as the composite become the most popular restorative material at the market.

Bibliography

1. Baldissera R., *et al.* "Are there universal restorative composites for anterior and posterior teeth?" *Journal of Dentistry* 41.11 (2013): 1027-1035.
2. Rosa D., *et al.* "22-Year clinical evaluation of the performance of two posterior composites with different filler characteristics". *Dental Materials* 27.10 (2011): 955-963.
3. Demarco F., *et al.* "Longevity of posterior composite restorations: not only a matter of materials". *Dental Materials* 28.1 (2012): 87-101.
4. Munck JD., *et al.* "A critical review of the durability of adhesion to tooth tissue: methods and results". *Journal of Dental Restorative* 84.2 (2005): 118-132.
5. Cenci M., *et al.* "The effect of polishing techniques and time on the surface characteristics and sealing ability of resin composite restorations after one-year storage". *Operative Dentistry* 33.2 (2008): 169-176.
6. Burke F., *et al.* "Outcome of direct restorations placed within the general dental services in England and Wales (Part 4): influence of time and place". *Journal of Dentistry* 33.10 (2005): 837-847.
7. Gilbert G., *et al.* "Rubber dam use during routine operative dentistry procedures: findings from the Dental PBRN". *Operative Dentistry* 35.5 (2010): 491-499.

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