# A Questionnaire-Based Survey Assessment of Iraqi Dentists Using Repair Versus Replacement of Defective Composite Restoration

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## Abstract

Tooth restoration one of the most common procedures in dental practice. The replacement of the entire restoration leads to loss of tooth structure and increase risk of pulp injury; replacement is also time consuming and costly. According to the minimally invasive approach when minimal defects, repair is the better choice than the total replacement of the restoration.

This study aims to evaluate repair rating versus replacement treatment procedure for defective composite fillings among Iraqi dentists.

**Material and methodology:** A questionnaire survey were designed and distributed to 184 post-graduate dentists in Iraq. The inquiry pertained general information; including their clinical experience in years, their preference in terms of direct composite restoration, repair or replacement of old restorations, whether they taught the indications for repair, and the selection type of composite for repair.

**Result** of 200 questioner's disrepute, 184 questionnaires were completed and collected. The data revealed that the respondents with 1-5, 6-15 and16-25 years of experience were 62 (33.7%), 75 (40.8%), and 47(25.5%) of total respondents, respectively. The total 174 dentists (94.6%) prefer using tooth-colored restorations and 10 (5.4%) dislike this approach. Result clearly indicate that most of the dentists choose replacement for any fractured or discolored restorations. The data showed that 59.2% of dentist are not familiar with repair, and 40.8% dentists are familiar. The result revealed that 82.1% the dentists were not trained on repair during their undergraduate study. Generally, they had no ideal standard to replace or repair depending on their clinical experience. Therefore, clear criteria and guidelines for replacing and repairing should be developed and followed in post-graduate courses.

***Key words:*** *Composite restorations, repair or replacement, Iraqi dentists.*

## Introduction

The requirement for an ideal esthetic material of tooth restoration has resulted in considerable improvements in materials and techniques. Various resin-based composite (RBC) materials have been recently introduced, offering improved esthetic and physical material properties[1].

Direct RBC restorations, as well as other forms of restorations, generally suffer from deterioration due to wear and tear[2]. The restoration of large defects in posterior teeth were tested to the maximum properties. The longevity of RBC materials may be compromised when using unprecise incremental technique[3], resulting in higher failure rates[4].

The clinical traditional management approach of restorations, in tooth exhibiting signs of defective margins (marginal deterioration, secondary caries or discoloration) is usually performed by total restoration replacement[5]. This approach leads to the significant disturbance of healthy tooth structure when the preparation area is enlarged, resulting in negative effect on tooth longevity. Moreover, the possibility of pulp fatal injury is increased [2]. Approximately 56% of restorations reportedly were refilled rather than restorations for new

lesions of caries[6].

Most defects in restorations, other than those caused by sudden impact fracture, gradually develop with time[(7,8)]. This providing an opportunity to classify the problems and then undertake minimal intervention to correct the defects [2]. Caries occurring at the margins of a restoration is considered a new lesion rather than recurrent caries. Therefore, localized repair rather than total restoration replacement is needed. [(2,3,8)]

When a minimal or localized defect appeared at one restoration region, repair is better option than total replacement of the restoration [9]. Repair usually involves partial replacement of a restoration using the same or different restorative materials. Practically repairing consume short operating time, so it can be used for uncooperative patients or those suffering complex medical histories. Furthermore, the repair may be performed without local anaesthesia and complex operative procedures [10]. RBC restoration repairing may be reduced to refurbishment only. Usually refurbishment involve the refinishing or resurfacing of a restoration with or without recontouring. Refurbishment usually involves refinishing or resurfacing with or without recontouring. Refinishing can be performed only to the margins of the restoration, while resurfacing may involve part or all of the exposed surfaces of restoration [3]. Although numerus surface treatment modalities have been introduced, the interface between the aged and repair composite material is considered weak link. However, none of these modalities can been regarded as the golden standard [(11,12)].

Owing to the unavailability of practical guidelines, so the decision between replacing or repairing usually depends on judgment of the clinician, according to their clinical experience. [10]

**The present study aims to survey the preference of Iraqi dentists between repair or replacement in dental restorations.**

## Material and Method

A survey questionnaire consisting of eight questions was designed and distributed to 200 post-graduated dentists engaged the public dental service. The respondents were informed that their demographics will be kept confidential. The survey inquired a general information of the participants, including years of clinical experience, their preference among direct composite restoration, repair or replacement of old restorations, and their preference of special composite material for repair. The collected questionnaires results were analyzed. The following percentage results were obtained: (1) Years of experience, (2) Prefer tooth colored restoration, (3) Preferred restoration methods if fractured, (4) Preferred restoration methods if discolored, (5) Familiarity with repair, (6) Trained on repair during under graduate study, (7) Repair decision influence by fillings age, and (8) Selection of special composite.

## Result

The complete questionnaire received from different dental health centers were one hundred eighty-four (N= 184) out of two hundred responded. The data of 184 revealed that dentists had experience of 1-5years were 62 (33.7%), 6-15 years were 75 (40.8%), 16-25 years were 47(25.5%). 174 dentists (94.6%) prefer using tooth-colored restorations and 10 (5.4%) dislike table (1). This table also indicated, that when there is any fracture in the restorations, 66.1% of dentists choosed restoration replacement. 20.2% of dentists their decision varies between replacement or repair according to the case, but 13.7% prefer repairing the defected filling. The data showed 59.2% of dentist not familiar with repair, and 40.8% dentists were familiar. the questioner revealed that 82.1% the dentists were not trained on repair during their undergraduate study while only 17.9 % were trained, figure (1).

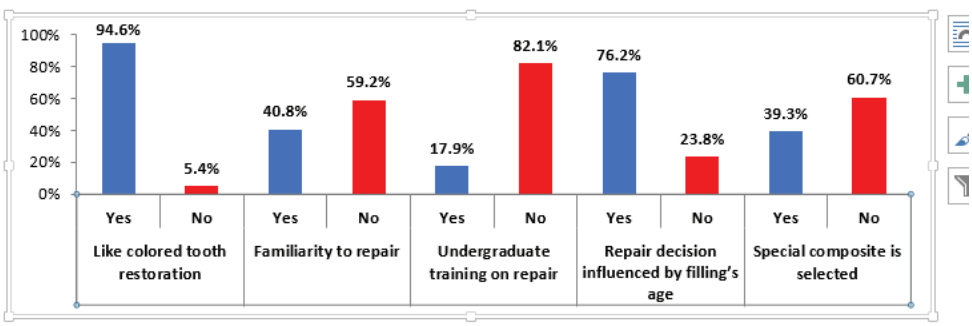


**Figure (1): Characteristics and responses of selected sample of dentists.**

The results demonstrated that when there was restoration discoloration, 53.3% of the participants whom familiar with repair preferred replacement over repair and 18.7% preferred repair of the restoration. The trained undergraduate dentists, 48.5% from them prefer replace over repair, while 24.2% their decision was according to the case, table (1)

**Table 1: Distribution of participants according to preference of restoration method for discolored filling and to studied variables:**

| | **Preference of restoration method** | | | | | |
|---|---|---|---|---|---|---|
| | **Repair** | | **Replace** | | **According to case** | |
| Variables | N=30 | % | N=115 | % | N=39 | % |
| Familiarity to repair | | | | | | |
| Yes | 14 | 18.7% | 40 | 53.3% | 21 | 28.0% |
| No | 16 | 14.7% | 75 | 68.8% | 18 | 16.5% |
| Trained on repair during undergraduate study | | | | | | |
| Yes | 8 | 24.2% | 16 | 48.5% | 9 | 27.3% |
| No | 22 | 14.6% | 99 | 65.6% | 30 | 19.9% |

While if there is fractured filling there were 78.9% of dentist which there not familiar to repair prefer rseplacement over repair of restoration 37.3%of dentists familiar with repair preferred replacement of filling. Table (2)

**Table 2: Distribution of participants according to preference of restoration method for fractured filling and to studied variables:**

| | **Preference of restoration method** | | | | | |
|---|---|---|---|---|---|---|
| | **Repair** | | **Replace** | | **According to case** | |
| **Variables** | **N=24** | **100%** | **N=121** | **100%** | **N=37** | **100%** |
| Familiarity to repair | | | | | | |
| Yes | 13 | 17.6% | 35 | 47.3% | 26 | 35.1% |
| No | 12 | 11.0% | 86 | 78.9% | 11 | 10.1% |
| Trained on repair during under graduate study | | | | | | |
| Yes | 5 | 15.6% | 21 | 65.6% | 6 | 18.8% |
| No | 20 | 13.2% | 100 | 66.2% | 31 | 20.5% |

In our study we shown that if repair decision influenced by fillings age some participate say yes and others no about the dentists which there show that there are a relation between filling age and repair decision 54.7% of them are not familiar with repair and 45.3%not familiar with repair and 81.3%are not trained on repair during under graduate and 18.8%are trained on under graduate study table (3)

**Table 3: Distribution of participants according to influence of filling's age upon repair decision and to different factors:**

| | Repair Decision influenced by filling's age | | | |
|---|---|---|---|---|
| | Yes | | No | |
| **Variables** | **N=30** | **100%** | **N=115** | **100%** |
| **Experience (y)** | | | | |
| • 1-5 y | 44 | 34.4% | 14 | 35.0% |
| • 6-15 y | 51 | 39.8% | 14 | 35.0% |
| • ≥16 y | 33 | 25.8% | 12 | 30.0% |
| **Familiarity to repair** | | | | |
| • Yes | 58 | 45.3% | 15 | 37.5% |
| • No | 70 | 54.7% | 25 | 62.5% |
| **Trained on repair during under graduate study** | | | | |
| • Yes | 24 | 18.8% | 8 | 20.0% |
| • No | 104 | 81.3% | 32 | 80.0% |

## Discussion

The results revealed that 94.6% of the participants prefer tooth-colored restoration as requirement for aesthetic dental restorations[3], and the RBC was the restorative material of choice for both anterior and posterior teeth **(1,5).** These results were consistent with those of Valeria V. Gordan Cynthia W. Garvan, Paul K. Blaser, Eduardo Mondragon; Ivar A. **5**,

Direct composite restorations (tooth-colored, with minimum tooth preparation) exhibited good performance. Thus, these materials are currently used for various purposes. Modern bonding materials and techniques decries polymerization shrinkage, microleakage and the occurrence of secondary caries. Therefore, composite resins are preferred by most practitioners for anterior and posterior restorations **13**.

Given the lake of acknowledgement among dentists about the advantages of repairing resin composite restorations, some dental practitioners are possibly unaware of the repair option. However, others consider the contraindications to repair: patient disinclination to accept a repair, irregular attendance, high risk of caries, presence of caries that undermine restoration, and history of previous repair failure [2]. in this study many participate considered the choice of repair or replacement depending on the restoration case. Therefore, a large percentage of dentists prefer replacement over repair. This finding consistent with the study of Tays et al. who considered that repair is not the standard of care and patchwork dentistry **14**.

The result of this research generally disagreed with those of other workers, which indicated an agreement among academicians in conservative dentistry worldwide in repairing rather than directly replacing resin composite restorations **(2,15,16).**

By contrast, this study revealed that the majority of dentists did not receive didactic information on repair during their undergraduate study. Only 17.9% of dentists claimed that they were taught and trained in composite repair during the BDS study. While 40.8% performed repairs in their practice.

Regarding discoloration of restoration, most dentists prefer replacement. Discoloration may be due to incorrect shade selection in the placement of a composite restoration, which may be managed by resurfacing using a different shade of composite material. If possible, the same restorative material should be used as the composite substrate. However, this condition might be impossible if the restoration was performed by a different practitioner, materials used were not recorded in the patient's notes, or the previous material is no longer commercially available. **2**

In this research, a high percentage of dentists prefer the replacement of fractured tooth-colored restoration. This preference may be attributed to fracture of tooth

tissue adjacent to a restoration, which may be occurred due to parafunctional activity or trauma, the subsequent to the damaging effects of polymerization stresses in resin composites at the time of restoration placement. A repair may be indicated when the fracture accurately diagnosed, and the risk for further fracture minimized [2]. This investigation underlines the need for clinical studies on repairs and the requirement for general guidelines of the repair indications and technique options.

## Conclusions

The choice between repairing or replacing a defective RBC restoration is multifactorial, and the answer of many participants was based on each case treatment. This study highlighted lack of acknowledgment among dentists about the advantages of repairing RBC. Evidently, most of the participants were unaware of repair indications and techniques similar to those of other countries in the world.

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**Conflict of Interest:** None to declare.

**Ethical Clearance:** All experimental protocols were approved under the Baghdad university college of dentistry and all experiments were carried out in accordance with approved guidelines.

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