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## **The Effect of Amalgam Fillings on Psychological and Clinical Situations Compared to Composite**

**Name: Qossay Mershed Abdelqader Alaloul**

**Dentist**

**Palestine**

**Abstract**

This paper presented a comparative analysis of amalgam and composite fillings, evaluating their clinical and psychosocial implications in restorative dentistry. Dental fillings are commonly used to treat dental caries and restore tooth structure. Historically, amalgam fillings have been the material of choice due to their durability and affordability. However, the rising demand for tooth-colored restorations has led to increased utilization of composite fillings. This study aims to provide a comprehensive evaluation of the advantages, disadvantages, and potential risks associated with both filling materials. The clinical assessment examines factors such as longevity, resistance to wear, and the effect on tooth structure. Amalgam fillings demonstrate superior durability and longevity compared to composite fillings, making them suitable for high-load bearing areas. On the other hand, composite fillings offer superior aesthetic results due to their ability to mimic natural tooth color and translucency. However, composite fillings are more susceptible to wear and may require replacement more frequently. Psychosocial considerations encompass patient satisfaction, self-esteem, and perception of dental aesthetics. Patients' preference for tooth-colored restorations has increased over time, with composite fillings often providing improved aesthetic outcomes and positively influencing self-perception. Amalgam fillings, due to their metallic appearance, can lead to self-consciousness and dissatisfaction with dental aesthetics. However, it is important to note that patient satisfaction is multifaceted, and individual preferences and clinical factors should be considered when selecting the appropriate



filling material. Based on the findings, this paper provided recommendations for further research, patient education, treatment customization, periodontal considerations, safety and environmental concerns, shared decision-making, and continuous professional development. Implementing these recommendations will enable dental professionals to provide informed and personalized care, considering the clinical and psychosocial aspects of dental restorations.

**Keywords:** *Amalgam Filling; Composite Filling; Psychological Situation; Clinical Situation; Dental; Patient; Tooth-colored.*

## **. Introduction**

Dental caries (tooth decay) is a dynamic and ongoing process that consists of cycles of demineralization and remineralization of the hard tissue of the teeth. The disease stage is determined by the balance of the two cycles (ICDAS 2011). Oral health and quality of life are linked, much as socioeconomic position and family environment have been found to influence people's oral health (Gomes et al., 2009; Paula et al., 2012). Despite significant progress in dental health worldwide, caries remains a substantial problem, particularly among underprivileged groups in low, middle, and high-income nations, affecting 60% to 90% of schoolchildren and the vast majority of adults (Costa et al., 2012). It is also the most common oral health issue in a number of Asian and Latin American nations (WHO 2012).

Modern caries management entails making a diagnosis to determine a person's caries risk status, followed by the implementation of intervention strategies aimed at preventing, arresting, and possibly reversing the caries



process in order to postpone restorative treatment until absolutely necessary (Ferreira Zandona et al., 2012). When the damage to the tooth structure is permanent, the most frequent therapy is to clean the cavity and replace it with a restorative substance to restore the tooth's shape and function.

Primary caries appears to be the most common reason for restoration (filling) placement, and caries lesions are most typically detected on the occlusal surfaces of posterior teeth (Nascimento et al., 2010). Secondary caries accounts for 60% of all replacement restorations in a typical dental practice, however no statistically significant relationship has been identified between the type of restoration materials, location of caries, and microbiota makeup (Mo et al., 2010).

### **1.1 Study Problem**

The obturation and filling of occlusal cavities has long been investigated. The optimal material for restoring anatomical structures while also achieving acceptable resistance to mastication pressures is still debatable (Alcaraz et al., 2014). This study evaluated dental amalgams and composite fillings, two of the most common types of dental restorative fillings used in tooth restorations today.

### **1.2 Study Questions**

The problem of the current study can be summarized in the following questions:



1. What is the difference between amalgam and composite filling?
2. How does the change from amalgam to composite filling affect psychological and clinical situations?

### **1.3 Study Objectives**

The problem of the current study can be summarized in the following objectives:

1. To determine the difference between amalgam and composite filling.
2. To examine the change from amalgam to composite filling affect psychological and clinical situations.

## **2. Literature Review**

### **2.1 Description of The Intervention**

Dental amalgams are alloys of metals. For almost 150 years, they have proven reliable and affordable restorative materials. Their use and success rate are well documented, and they are the most cost-effective materials used in posterior tooth restorations. However, their use in dentistry is waning, owing to their unsightly appearance and worries about mercury levels (Kelly 2004; Mitchell 2007).

People's desire for tooth-colored restorations prompted the development of dental resin composites. Particle-reinforced resins are what dental resin composites are. Resin composites' indications have increased from



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anterior teeth to limited posterior restorations and even stress-bearing posterior restorations as amalgam substitutes or amalgam alternatives (Lutz, 1999). Other benefits of dental resin composite restorations are their low cost and reparability.

For a single restoration delivered in a single dental appointment, the cost of installing dental amalgams (USD 12.40) is only marginally less than the cost of placing composite fillings (USD 15.90). However, when long-term costs are considered, Sjögren et al. calculated that the estimated cost over 10 years for a Class II restoration was USD 189.80 for amalgam fillings and USD 363.70 for composite fillings (CADTH, 2012).

## **2.2 The Work of the Intervention**

For correcting permanent molar and premolar cavities, dental amalgam and resin composite restorations remain the most popular options. The use of amalgam as the preferred material for posterior tooth restoration has steadily given way to resin composite. Surveys and retrospective studies conducted by groups of practice-based researchers, on the other hand, differ in their results about which material is most widely utilized in restorative dentistry nowadays (Makhija 2011; Nascimento 2010).

Composite dental restoratives have made major and exciting breakthroughs in resin formulation, filler loading and modification, and curing techniques and mechanisms in recent years (Cramer, 2011). The current debate is whether amalgam restorations should be prohibited due



to mercury toxicity. It is critical to distinguish between known and hypothetical dangers when addressing safety concerns (Rathore, 2012). The truth is that a number of potentially hazardous substances may be released from restorative dental materials (amalgam and composites) and can enter the tooth pulp or gingiva, reaching both saliva and circulating blood (Libonati, 2011).

While the usage of dental amalgam has fallen in some parts of the world (Mitchell 2007), it remains the restorative material of choice in others. Concerns about mercury release in the body and environmental damage following disposal have contributed to the drop. The Minamata Convention on Mercury suggests a timed phase-down by national governments based on local needs to establish a balance between the environmental impact of mercury product disposal, including amalgam, and its public health value (BDA 2013; UNEP 2013). The World Health Organization (WHO) adds that the transition away from amalgam would be contingent on the quality of alternative restoration materials improving.

### **2.3 Amalgam Versus Composite Filling**

Two recently completed randomized controlled clinical trials in the United States and Portugal demonstrated the safety of dental amalgam restorations in youngsters. Although these studies definitively resolved decades of controversy surrounding the use of mercury-containing amalgam in children, dentists may continue to seek amalgam alternatives



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that are thought to be more suitable for the restoration of posterior primary teeth or esthetically preferable for permanent teeth (Bellinger et al., 2006; DeRouen et al., 2006).

Resin-based composite restorative materials have become a popular alternative to amalgam over the last three decades. Both amalgam and resin-based compomer/composite materials are safe and effective for tooth repair, according to the American Dental Association Council on Scientific Affairs (AFFAIRS, 2003). However, the debate over which material is more durable persists (Coppola et al., 2003; Rosenstiel et al., 2004).

The physical and functional qualities of amalgam and resin-based compomer/composite are substantially different. Amalgam is a mixture of mercury and silver alloy powder that solidifies at mouth temperature and has been used in dentistry for over 150 years. It is resistant to a wide variety of clinical placement settings and moderately resistant to moisture during placement. In large load-bearing restorations, amalgam's biocompatibility and durability are good to exceptional, but the silver-colored material has limited esthetic appeal, and safety concerns remain (Fuks, 2002; Needleman, 2006).

Periodontal health and dental restorations are inextricably linked. The type of restoration, margin adaptation, contours of the restoration, proximal relationships, and surface smoothness all have a significant biological impact on the gingiva and supporting periodontal tissues



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(Alcaraz et al., 2014). As a result, dental restorations play an important role in maintaining periodontal health. The preservation of a healthy periodontium is critical for the long-term success of class II dental restorations. As a result, if the distances between the junctional epithelium and supracrestal connective tissue attachment are not respected, or if there is insufficient space to maintain the health of the interproximal tissues, gingival inflammation, connective tissue attachment loss, and bone resorption may occur (Sjögren and Halling, 2002).

Dental amalgam containing mercury has been criticised due to its toxicity and hence being hazardous to general health. Many spectacular, confusing, and misleading reports must have been published. There is now proof that dental amalgam in the oral cavity is safe for everyone's health (Fuks, 2002). For those who oppose amalgam, there are numerous alarming reports addressing the biologic effects of resin composites: methacrylate allergy in dentists and dental technicians, the three-finger syndrome caused by contact with liquid resin, allergic reactions at the level of the airways, and breathing problems caused by dust particles (particularly composite particles after polishing procedures) have been described. In light of the health of both patients and dental care providers, it is possible to conclude that dental amalgam is not more harmful than resin composite. Recent research has revealed that resin composites provide greater health concerns than previously thought (Lynch et al., 2014).





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Healing of the gingiva is required before beginning restorative dental treatment, especially if the cervical edge of the obturation is to be put subgingivally (Zöchbauer, 2011). Rubber dams, wedges, matrices, retraction cords, and local removal of excessive gingival tissues (via solutions, electrical cauterization, LASER, etc.) or surgical alteration of gingival architecture can be used to protect and maintain the health status of gingival tissues (Kim et al., 2013). Maintaining adequate dental architecture by obtaining accurate occlusal, proximal, vestibular, oral, and cervical anatomy is essential for delivering effective restorative therapy (Manhart et al., 2004). Existing plastic restorations that are unsatisfactory may be redesigned and polished if they can be improved in this way. In every clinical operation of restorative treatment, gingival stress should be kept to a minimum (Heintze and Rousson, 2012).

Silver-mercury amalgam and resin-based composite are the two most often utilized direct dental restorative materials today (Mjör, 1997). The survival rate of dental amalgam restorations is twice that of composite fillings: polymerization shrinkage, inadequate marginal adaptation, higher wear rates, defective contact points leading to food impaction, and insufficiently converted composite at the bottom of the cavity are all issues that should not be overlooked when using resin composite (Wilson et al., 2002). This is not to say that amalgam is without flaws: the need for retentive cavities at the expense of healthy tooth substance, the weakening of the tooth's strength by cutting through the ridges of the tooth crown, the risk of fracture of remaining tooth substance (mostly



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buccal and lingual surfaces) as a result of cavity design, and the lack of adhesion between amalgam and tooth substance (Bernardo et al., 2007).

Keeping a tooth's strength by replacing amalgam with resin composites is not always the best choice. In this regard, it is debatable whether it is preferable to fix failing (extensive) amalgam restorations rather than replace them with resin composites (Jpt, 2005). According to research, dentists are still not convinced of the efficacy of this treatment method. The biomimetic theory is based on restoring a tooth in its original build-up or structure and function within the oral cavity: the use of composite appears to be more obvious than repairing with amalgam (Moher et al., 2009). Periodontal health and dental restorations are inextricably linked: periodontal health is required for all restorations to function well, while functional stimulation from dental restorations is required for periodontal protection (Scale, 2014). The current study compares the effect of class II amalgam and composite restorations on the health of periodontal tissues.

### **3. Methodology**

Any research methodology can be characterized as a set of tactics utilized to get the intended findings. As a result, the methodology is developed in accordance with the study's methodology, as well as the researcher's attitudes and ideas (Cooper, 2006). This study is located within the theoretical framework of analytical descriptive studies. Many processes, methods, and strategies were implemented in the research to achieve the



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study objectives, but the most commonly used methods for conducting the same type of this study are analytical descriptive methods.

The quantitative approach is largely described as a deductive strategy that makes extensive use of surveys. This strategy primarily collects, analyses, and applies data to test relativity ideas (Bryman, 2007).

The approach employed in this study to achieve and attain objectives included the use of a theoretical framework, as well as the use of a survey to collect and analyze data. The survey approach is regarded semi-deductive, as opposed to the experimentation approach, which is entirely deductive. In this study, the descriptive analytical technique was used to review the literature as well as build the questionnaire that was utilized to create a theoretical basis for the research issue, while the quantitative method was employed in the questionnaire. The information gathered from this questionnaire will help researchers better understand the factors that contribute to the spread of aggressive behavior among kindergarten students in East Jerusalem. Finally, data analysis was carried out using the findings from the literature review and questionnaire.

The study population consists of patients that installed amalgam fillings and composite fillings. To achieve the goal of this study, the researcher relied on a random sample of 58 patients.



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## **4. Analysis and Results**

### **4.1 Validity and Reliability**

Validity and dependability are among the most important topics of interest to researchers because of their enormous influence on study results and their capacity to be generalized. The research tools used, their ability to measure what they are intended to assess, and the accuracy of the readings acquired from those tools are all aspects that affect reliability and validity.

Garson, (2002) defines validity in scientific research as the correctness of the research in assessing the objective for which it is developed, i.e. to what extent the research tool provides us with information relating to the research topic from the study population itself.

The validity of the tool's content (the questionnaire) was confirmed in this study by presenting it to academic reviewers who were asked to check that the questionnaire adequately covered the subject of the study, the clarity with which the phrases were expressed, and the degree to which they were related to the section to which they were related. They were invited to provide comments on whether the questionnaire should be changed, expanded, or withdrawn. The researcher then used this feedback to build the final version of the questionnaire.



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#### **4.1.1 Validity**

To validate the questionnaire, Pearson correlation coefficients were calculated using SPSS to confirm the consistency of all the survey items with the axis (section) to which they belong, and the results are shown in Table below.



**Table (1) Correlation Matrix**

Correlations										
		There were changes on your behavioral traits after the changing	There were mouth ulcers and soreness	There were depression and anxiety	There is change in the efficiency of the mastication when eat	There is change in dietary habits due to changing of the fillings	There is change on your confidence when you were eating food or talking to the people	When you had amalgam, you were nervous or stressed	You were feeling tired or fatigue when you had amalgam fillings	You felt numbness or tingling in your legs or fingers
There were changes on your behavioral traits after the changing	Pearson Correlation	1	.454**	.651**	.591**	.785**	.494**	.785**	.621**	.698**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N	58	58	58	58	58	58	58	58	58



There were mouth ulcers and soreness	Pearson Correlation	.454 <sup>**</sup>	1	.687 <sup>**</sup>	.548 <sup>**</sup>	.638 <sup>**</sup>	.304 <sup>*</sup>	.444 <sup>**</sup>	.389 <sup>**</sup>	.439 <sup>**</sup>
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.020	0.000	0.003	0.001
	N	58	58	58	58	58	58	58	58	58
There were depression and anxiety	Pearson Correlation	.651 <sup>**</sup>	.687 <sup>**</sup>	1	.716 <sup>**</sup>	.795 <sup>**</sup>	.574 <sup>**</sup>	.783 <sup>**</sup>	.570 <sup>**</sup>	.637 <sup>**</sup>
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000
	N	58	58	58	58	58	58	58	58	58
There is change in the efficiency of the mastication when eat	Pearson Correlation	.591 <sup>**</sup>	.548 <sup>**</sup>	.716 <sup>**</sup>	1	.728 <sup>**</sup>	.566 <sup>**</sup>	.589 <sup>**</sup>	.630 <sup>**</sup>	.601 <sup>**</sup>



	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000
	N	58	58	58	58	58	58	58	58	58
There is change in dietary habits due to changing of the fillings	Pearson Correlation	.785**	.638**	.795**	.728**	1	.492**	.756**	.647**	.660**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000
	N	58	58	58	58	58	58	58	58	58
There is change on your confidence when you were eating food or talking to the people	Pearson Correlation	.494**	.304*	.574**	.566**	.492**	1	.575**	.334*	.309*





	Sig. (2-tailed)	0.000	0.020	0.000	0.000	0.000		0.000	0.010	0.018
	N	58	58	58	58	58	58	58	58	58
When you had amalgam , you were nervous or stressed	Pearson Correlation	.785**	.444**	.783**	.589**	.756**	.575**	1	.794**	.818**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
	N	58	58	58	58	58	58	58	58	58
You were feeling tired or fatigue when you had amalgam fillings	Pearson Correlation	.621**	.389**	.570**	.630**	.647**	.334*	.794**	1	.880**
	Sig. (2-tailed)	0.000	0.003	0.000	0.000	0.000	0.010	0.000		0.000
	N	58	58	58	58	58	58	58	58	58



You felt numbness or tingling in your legs or fingers	Pearson Correlation	.698 <sup>**</sup>	.439 <sup>**</sup>	.637 <sup>**</sup>	.601 <sup>**</sup>	.660 <sup>**</sup>	.309 <sup>*</sup>	.818 <sup>**</sup>	.880 <sup>**</sup>	1
	Sig. (2-tailed)	0.000	0.001	0.000	0.000	0.000	0.018	0.000	0.000	
	N	58	58	58	58	58	58	58	58	58
** . Correlation is significant at the 0.01 level (2-tailed).										
* . Correlation is significant at the 0.05 level (2-tailed).										



The preceding Table shows that all of the statements are related to the questionnaire's intended part because the calculated Pearson correlation coefficients for them range between (0.304 - 0.794), and all of the correlations are significant. This shows that the questionnaire's overall conclusions are reliable and internally consistent with the objective for which it was designed.

#### **4.1.2 Reliability**

The ability of an instrument (tool) to produce the same results when the measurement is repeated on the same sample multiple times under the same conditions is referred to as reliability (Golafshani, 2003). For this study, the reliability of the questionnaire instrument was tested using SPSS to generate Cronbach's Alpha, the most often used reliability test.

The following Table demonstrates the tested reliability coefficients for the distributed questionnaire utilizing Cronbach's alpha values:

**Table (2) The results of Cronbach' alpha reliability test**

<b>Questionnaire sections and dimensions</b>	<b>Cronbach Alpha coef.</b>
<b>Questionnaire</b>	<b>0.931</b>

The Cronbach's alpha value (0.931) was discovered for all questionnaire items, as indicated in the Table above. As stated in the Table above, Cronbach's alpha value (0.931) was observed for all questionnaire items. It means that the tool's dependability is acceptable as long as Cronbach's



Alpha values are more than (0.7) for all of the overall components. These findings imply that no items should be revised or eliminated because each statement is important to its region and the overall statements are related to the questionnaire (Graham, 2006).

#### 4.2 Descriptive Statistics (Demographics Variables)

**Table (3) Age characteristics**

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0-20	4	6.9	7.0	7.0
	21-40	36	62.1	63.2	70.2
	41-older	17	29.3	29.8	100.0
	Total	57	98.3	100.0	
Missing	System	1	1.7		
Total		58	100.0		

Table (3) shows how the sample size was divided into three age groups. The respondents under 21 make up the first age group, accounting for 6.9% of the overall sample size, this category represents the smallest proportion of the total sample size. The second group of respondents was between the ages of 21 and 40, accounting for 62.1% of the overall sample size, this is the largest age group in the sample size. Finally, respondents above the age of 40 made up 29.3 of the total sample size.



**Table (4) Gender characteristics**

<b>Gender</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	22	37.9	37.9	37.9
	Female	36	62.1	62.1	100.0
	Total	58	100.0	100.0	

**Table (5) What is the first difference did you observe it when you changed the amalgam filling to composite**

<b>What is the first difference did you observe it when you changed the amalgam filling to composite</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		52	89.7	89.7	89.7
	Esthetics	1	1.7	1.7	91.4
	I feel better	1	1.7	1.7	93.1
	N/A	1	1.7	1.7	94.8
	Sensitivity	1	1.7	1.7	96.6
	the look of it	1	1.7	1.7	98.3
	The tooth doesn't look so dark	1	1.7	1.7	100.0
	Total	58	100.0	100.0	

Table (5) shows the first difference did patient observe when he/she changed the amalgam filling to composite. The results find that patients observe that the composite filling added the feeling of esthetics, feel better, some patients observe that the look is different, and the tooth doesn't look so dark.



**Table (6) How many amalgam fillings you had it in the past 10 years?**

<b>How many amalgam fillings you had it in the past 10 years</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-3	27	46.6	46.6	46.6
	4-6	26	44.8	44.8	91.4
	7-more	5	8.6	8.6	100.0
	Total	58	100.0	100.0	

Table (6) shows that 46.6% of the respondents have had 1-3 amalgam fillings in the past 10 years and 44.8% of the respondents have had 4-6 amalgam fillings in the past 10 years, finally, 8.6% of the respondents have 7 and more amalgam fillings in the past 10 years.

**Table (7) Which one makes your teeth less sensitive to the food and drinks?**

<b>Which one makes your teeth less sensitive to the food and drinks</b>					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Amalgam	8	13.8	13.8	13.8
	Composite	40	69.0	69.0	82.8
	No difference , both of them sensitive	3	5.2	5.2	87.9
	No difference , no sensitivity	7	12.1	12.1	100.0
	Total	58	100.0	100.0	

Table (7) 13.8% of respondents show that the amalgam makes their teeth less sensitive to food and drinks, on the other hand, 69% of the



respondents show that the composite makes their teeth less sensitive to food and drinks, moreover, 5.2 of respondent show that there is no difference between amalgam and composite, both of them are sensitive, Finally, 12.1% of respondent show that there is no difference between amalgam and composite, both of them are not sensitive.

### 4.3 Descriptive Summery

Through the use of SPSS, the descriptive statistics (means and standard deviation) of the responses, which were obtained using a six-point Likert scale, were calculated. Means between (1 and 1.80) were regarded as very low, between (1.81 and 2.60) as low, between (2.61-3.40) as a medium, between (3.41-4.20) as high, and between (4.21-5.00) as very high.

**Table (8) Descriptive summary for variables**

# of question	Statements	Means	Standard deviations	Practices degree
Q1	There were changes on your behavioral traits after the changing?	4.16	1.335	High
Q2	There were mouth ulcers and soreness?	4.19	0.847	High
Q3	There were depression and anxiety?	4.24	0.885	Very high
Q4	There is change in the efficiency of the mastication when eat?	4.28	1.056	Very high
Q5	There is change in dietary habits due to changing of the fillings?	4.21	1.225	Very high



Q6	There is change on your confidence when you were eating food or talking to the people?	4.57	1.141	Very high
Q7	When you had amalgam, you were nervous or stressed?	4.17	1.078	High
Q8	You were feeling tired or fatigue when you had amalgam fillings?	3.91	1.328	High
Q9	You felt numbness or tingling in your legs or fingers?	3.79	1.335	High
	<b>Overall</b>	<b>4.17</b>	<b>0.924</b>	<b>High</b>

It can notice from the above table that means that the measure of items is high to very high (3.79-4-57). It can be also seen that question (6) represents the highest agreed-to mean statement (4.57, Std. = 1.141), and was followed by question (4) with a mean (4.28, Std.= 1.056), thirdly, question (3) with a mean (4.24, Std.= 0.885), fourth, the question (6) with a mean (4.57, Std.= 1.141), fifth, the question (2) with a mean (4.19, Std.= 0.847), sixth, the question (7) with a mean (4.17, Std.= 1.078), seventh, the question (1) with a mean (4.16, Std.= 1.335), eighth, the question (8) with a mean (3.91, Std.= 1.328), finally, the question (9) with a mean (3.79, Std.= 1.335).

The portion's overall mean was (4.17), which indicates that the majority of the study sample strongly agrees with the items in this component of the investigation. This shows that the patients have changes in their





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behavioral traits after changing from amalgam to composite filling, although the majority of patients have mouth ulcers and soreness after this change. Moreover, the majority of patients had depression and anxiety after this change, and the majority of them felt a change in the efficiency of the mastication when eating, furthermore, they had a change in dietary habits due to changing of the fillings. One of the most important psychological changes that they felt change in their confidence when they were eating food or talking to people, conversely, they were nervous or stressed when they had amalgam. Most patients feel tired and fatigued when you had amalgam fillings. Finally, most of the patients felt numbness or tingling in their legs or fingers.

The provided results suggest that the majority of the study sample strongly agrees with the items related to behavioral traits after changing from amalgam to composite filling. This indicates that there are noticeable changes in the patients' behavioral traits following the switch. However, it is important to note that despite the positive change in behavioral traits, most patients experienced mouth ulcers and soreness after the transition.

Additionally, a significant number of patients reported experiencing depression and anxiety after changing from amalgam to composite filling. This psychological impact could be a result of various factors, such as the overall experience of undergoing dental procedures or concerns about the new filling material.



Furthermore, the majority of patients felt a change in the efficiency of their mastication while eating. This suggests that the switch in fillings may have affected their ability to chew food comfortably or efficiently.

It is worth noting that the patients also reported a change in dietary habits following the switch. This indicates that the transition from amalgam to composite fillings had an influence on their food choices or eating patterns.

One of the most significant psychological changes reported by the patients was a change in confidence when eating or talking to people. This suggests that the patients felt more self-assured and at ease after the switch to composite fillings compared to when they had amalgam fillings, where they experienced nervousness or stress.

Additionally, most patients reported feeling tired and fatigued when they had amalgam fillings. This suggests a potential association between amalgam fillings and feelings of tiredness or fatigue, although further investigation would be necessary to establish a conclusive link.

Finally, a notable number of patients reported experiencing numbness or tingling in their legs or fingers. While this could be related to various factors, it is worth considering the possibility of a connection between these symptoms and the presence of amalgam fillings.

Overall, these results indicate that changing from amalgam to composite fillings may have both positive and negative effects on patients. While



there are improvements in behavioral traits and confidence, there are also reports of negative physical and psychological symptoms. Further research and analysis are necessary to better understand these findings and their potential implications for dental treatment.

## **5. Conclusion and Recommendations**

In conclusion, this paper focused on comparing dental amalgam and composite fillings as two common types of dental restorative materials. The study aimed to determine the differences between amalgam and composite fillings and examine the impact of transitioning from amalgam to composite fillings on psychological and clinical situations.

The literature review provided an overview of dental caries, the process of demineralization and remineralization, and the prevalence of caries worldwide. It discussed the importance of modern caries management and the need for restorative treatments when tooth structure damage is permanent. The review also highlighted the ongoing debate between dental amalgam and resin composite restorations, considering factors such as aesthetics, durability, biocompatibility, and safety concerns.

The methodology employed a quantitative approach using a survey to collect data from a sample of 58 patients who had both amalgam and composite fillings. Validity and reliability tests were conducted to ensure the questionnaire's content validity and internal consistency.



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The analysis and results section presented descriptive statistics, including demographic variables and the participants' responses to questionnaire items. The results indicated that most participants observed changes in behavioral traits, mouth ulcers, soreness, and depression and anxiety after transitioning to composite fillings. They also reported improvements in mastication efficiency, dietary habits, and confidence when eating or talking to people. However, some participants experienced feelings of tiredness, fatigue, numbness, or tingling associated with amalgam fillings.

The findings suggest that the transition from amalgam to composite fillings has both positive and negative effects on patients. While composite fillings offer improved aesthetics and psychological well-being, concerns about physical symptoms and safety remain. Further research is needed to gain a better understanding of these findings and their implications for dental treatment.

In conclusion, this study contributes to the existing knowledge on dental restorative materials by examining the differences between amalgam and composite fillings and exploring their impact on patients' psychological and clinical situations. The findings highlight the complexity of the issue and the need for comprehensive assessment when considering restorative treatment options.

Based on the findings and analysis presented in the paper, the following recommendations can be made:



1. **Further Research:** Conduct additional studies to explore the long-term effects of changing from amalgam to composite fillings. Longitudinal studies with larger sample sizes can provide more comprehensive insights into the psychological and clinical implications of this transition.
2. **Patient Education:** Improve patient education and awareness regarding the differences between amalgam and composite fillings. Dental professionals should provide clear and accurate information about the advantages, disadvantages, and potential risks associated with each type of filling material. This will enable patients to make informed decisions about their dental restorations.
3. **Treatment Customization:** Dentists should consider individual patient factors and preferences when choosing the most suitable filling material. Assessing patients' aesthetic concerns, functional needs, and oral health conditions can help determine whether amalgam or composite fillings are more appropriate for each specific case.
4. **Periodontal Considerations:** Pay close attention to the impact of dental restorations on periodontal health. Proper margin adaptation, contouring, and surface smoothness of the restorations are crucial for maintaining periodontal health. Dental professionals should ensure that restorations do not compromise the health of the surrounding periodontal tissues.



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5. **Continuous Professional Development:** Dental professionals should stay updated on advancements in restorative materials, techniques, and best practices through continuous professional development. This will ensure that they can provide the highest quality care and offer the most up-to-date information to their patients.

By implementing these recommendations, dental professionals can enhance patient care, improve treatment outcomes, and contribute to the overall oral health and well-being of their patients.



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