



## THE PREVALENCE OF DENTAL RESTORATIONS AND THE STATUS OF TOOTH LOSS WITH CLINICAL AND MICROBIOLOGICAL EFFECTS OF DIFFERENT RESTORATIVE MATERIALS AMONG SAUDI ARABIAN CITIZENS

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### Abstract:

In the world's healthiest countries, tooth loss accounts for 2.3% of all cases and is a major cause of disability-adjusted life years (DALYs). Tooth loss is primarily caused by untreated dental caries and has a negative effect on appearance, function, and mental health. The risk of tooth loss in adulthood is increased by developing oral diseases, even with improvements in dental education and conservation. With a 96% success record, dental implants are the ideal option; yet, due to cost and surgical anxiety, awareness of these implants is not universal.

This study investigates the patterns of tooth loss in Saudi Arabia, where it is estimated that between 73 and 78% of people may be toothless. Periodontal disease (30–50%) and dental caries (affecting 24-70%) both have a major impact. Trauma is another significant component, especially in younger age groups. Dental restorations, which are between 10 and 20 percent common, are hampered by cultural beliefs, access issues, and budgetary limitations. They are essential for treating tooth loss.

In Saudi Arabia, community-based interventions, public health campaigns, and educational initiatives are used to address tooth loss. It is necessary to address the factors that lead to tooth loss, such as inadequate fluoride intake, excessive sugar consumption, poor oral hygiene, limited access to care, and cultural influences. Public health campaigns, educational initiatives, community projects, cost-cutting strategies, and cultural campaigns debunking dental health stereotypes are a few examples of interventions.

**Key words:** Saudi Arabia, dental implants, periodontal disease, tooth loss, oral health, and dental restorations

## **Introduction:**

Teeth loss is a prevalent dental illness and one of the 100 detrimental health disorders that affect individuals globally.

Of all oral illnesses, tooth loss is the leading cause of disability-adjusted life years (DALYs), accounting for 7.6 million DALYs. Affecting 2.5 billion people globally, untreated dental caries is the most common Global Burden of Diseases (GBD) [1].

This is important because periodontal disease and caries are the most common predisposing factors to adult tooth loss [2]. A 2014 poll found that 158 million persons worldwide, or 2.3% of the total population, were edentulous. The study also showed that between 1990 and 2000, the global prevalence of age-standardized tooth loss decreased from 4.4% to 2.4%, despite a 45% decline in the global population..

The developing world often provides very little data, and the few records from wealthy countries that do allow direct attempts to predict tooth loss accurately are difficult to interpret [3].

Although conservation is the dominant mindset in dental education and practice, tooth extraction is often necessary due to the time-dependent progression of oral diseases that raise the risk of tooth loss in maturity [3, 4]. It consistently degrades one's quality of life and negatively affects one's psychological state in addition to impairing one's capacity to operate and appear well [5, 6].

Although there are other factors as well, such as trauma, periodontal illnesses brought on by bone loss that causes tooth mobility, and dental caries itself, dental caries is the most common cause of tooth loss. Dental and fixed partial dentures are a few of the options for tooth replacement. Dental implants are the preferred choice when replacing a tooth due of their high 96% success rate and 15–20 year lifespan. Researchers discovered that most patients are over 80% satisfied with their fixed implant.

Many studies have been conducted to ascertain patients' awareness of implants in different countries; nevertheless, the level of awareness varies from 23% to 79%, and other studies have discovered that patients' incapacity to choose implants was caused by their high cost in 86.5% of cases. An additional disadvantage of implants was that, in 68.6% of cases, the need for bone implantation meant longer treatment periods, which made, which made patients fearful of surgery [1].

According to the Swiss National Health Survey in 2002, almost 90% of those requiring dental restorations between the ages of 65 and 74 had complete dentures. This number increases with age, reaching nearly all individuals over the age of 85. Despite this need for restoration, less than one percent of patients sampled used dental implants alongside removable dentures. Across Europe as a whole, Sweden demonstrated the highest prevalence rate for such procedures among edentulous people; however it remained below eight percent even there [3].

Tooth loss and the need for dental restorations are significant issues in Saudi Arabia, indicating poor oral health among its population. Statistics suggest that a vast majority - from 73% to 78% - of Saudis suffer from toothlessness caused by various factors like trauma, periodontal disease or tooth decay.

Tooth decay, commonly known as dental caries, is a prevalent reason for tooth loss in Saudi Arabia. The occurrence of dental caries ranges from 24% to 70%, indicating high frequencies. Various factors contribute to this trend such as inadequate oral hygiene practices, excessive sugar consumption and insufficient usage of fluoride treatments.

Periodontal disease, which refers to infections that impact the gums and structures supporting teeth, is a prominent cause of tooth loss in Saudi Arabia. Roughly 30% to 50% of individuals are estimated to suffer from this condition. Over time, periodontal disease can destroy tissues responsible for holding teeth in place - leading ultimately to tooth loss.

Tooth loss is also attributed to trauma, particularly accidents and injuries, in Saudi Arabia. Although the exact prevalence remains unclear, it appears to be a significant contributor among younger age groups.

The management of tooth loss and restoration of oral function heavily relies on dental restorations, including fillings, crowns, and bridges. However, estimates suggest that the prevalence of these procedures in Saudi Arabia is quite low - ranging from 10% to 20%. This can be attributed to diverse

factors such as financial challenges, inadequate access to dental care services as well as cultural beliefs.

Tooth loss prevention and increased use of dental restorations in Saudi Arabia require key strategies such as the enhancement of oral health practices, promotion of preventative measures, and improved access to quality dental care. This can be achieved through effective public health initiatives, educational programs, and community-based interventions that effectively promote oral hygiene while reducing the detrimental effects associated with tooth loss among citizens.

### **Factors Affecting Dental Restorations and Tooth Loss**

This title captures the interplay between socioeconomic factors (SES) and oral health outcomes, specifically focusing on the Saudi Arabian context.

#### **Socioeconomic Determinants of Oral Health in Saudi Arabia**

The text identifies several risk factors influencing oral health in Saudi Arabia:

**Inadequate dental care practices:** This could be linked to a lack of awareness about oral hygiene routines or the absence of affordable dental services.

**Limited access to dental services:** Geographic remoteness, financial constraints, or insufficient dental insurance coverage can all restrict access to dental care.

**Excessive sugar consumption:** Dietary habits, particularly high sugar intake, are well-established risk factors for dental cavities.

**Suboptimal fluoride consumption:** Fluoride intake through water fluoridation or toothpaste helps prevent tooth decay. Deficient fluoride levels might contribute to higher caries rates.

These factors often cluster along socioeconomic lines. Low-income individuals might struggle to afford dental care or preventive oral hygiene products like fluoride toothpaste. Additionally, cultural beliefs or limited access to dental education could influence oral hygiene practices.

#### **Potential Strategies to Improve Oral Health in Saudi Arabia**

The scientific text also highlights some strategies to promote better oral health:

**Public health campaigns:** Educational campaigns promoting good dental hygiene practices can raise awareness and empower individuals to take charge of their oral health.

**Educational programs:** School-based or community-driven programs can equip people with the knowledge and skills for proper oral hygiene.

**Enhanced accessibility of dental care:** Expanding dental clinics in underserved areas, offering sliding scale fees, or promoting dental insurance could improve access to dental services.

#### **Incorporating a Socioeconomic Lens**

By integrating a socioeconomic perspective into your research, you can delve deeper into the root causes of oral health disparities in Saudi Arabia. Here are some possible areas to explore:

**Income level and oral health outcomes:** Investigate how income disparities correlate with the prevalence of tooth decay, gum disease, and dental service utilization.

**Educational attainment and oral health behaviors:** Examine how educational background influences oral hygiene practices and knowledge about preventative dentistry.

**Geographic variations and access to care:** Analyze how geographic location (urban vs. rural) affects access to dental services and influences oral health.

### **Additional Considerations**

**Cultural factors:** Explore how cultural beliefs and practices regarding oral health might influence dental hygiene behaviors.

**Social determinants of health:** Consider broader social determinants of health, such as poverty, housing conditions, and access to healthy foods, that might indirectly influence oral health.

By investigating these socioeconomic determinants, your research can provide valuable insights for policymakers and dental health professionals to design targeted interventions that effectively address oral health disparities in Saudi Arabia.

## Discussion

The study aims to examine the demographic characteristics of 98 Saudi Arabian individuals and determine if there is a correlation between those features and indicators of oral health. Several variables, such as region, socioeconomic status, educational attainment, age group, gender identity or nationality in conjunction with monthly income are analyzed using descriptive statistics that highlight significant patterns or trends related to central tendencies including variation and distribution measures presented within each factor.

The distribution of sex in the sample reveals that there are 68 males and only 30 females. The male population predominates, supported by a mean sex value of 1.31 where mode and median also exhibit equal measure- indicating reasonable symmetry in distribution. Analysis has failed to establish any significant correlation ( $p > 0.05$ ) between survey replies and gender purportedly examined here as an independent variable, but taking into consideration skewed representation towards men may necessitate delving further for assessing potential oral health issues specifically affecting different genders or knowledge levels related thereto.

The participants' ages are categorized into three groups depending on their distribution: 20-39, 40-59, and over 60. A mean age of 1.73 with a standard deviation of .083 implies considerable diversity among the group members. The research shows that there is a significant correlation between age and survey responses ( $p < 0.05$ ). In view of varying dental care needs and practices across different generations, additional investigations must explore how each cohort approaches oral hygiene management from its perspective.

The majority (88 participants) of the sample in this study were Saudi natives, while a minority (8) consisted non-Saudis. The mean value for nationality was 2.06 and revealed that those from Saudi Arabia predominated in the data set. Additionally, survey responses were found to have a statistically significant correlation with nationality at  $p < 0.05$  level which emphasizes that cultural and national contexts should be considered when designing oral health interventions due their potential impact on attitudes and behaviors towards dental care practices.

Monthly salaries can be classified into three categories: less than 1000SR, between 1000 and 5000SR, and over 5000SR. The standard deviation is recorded at a value of 0.58 with the mean salary being calculated as approximately equal to 2.73; this indicates that there is noteworthy income variability within these groups. Analysis reveals no statistically significant correlation between pay rates and survey responses ( $p > 0.05$ ). It would still be prudent to consider financial factors' potential impact on access to dental care despite lacking compelling evidence for direct influence of income on oral health behavior in this sample population.

The sample reveals a significant number of individuals who possess university degrees, as per the educational distribution (89). This indicates that the majority of participants are well-educated with an average education value of 1.91. Despite analyzing survey responses and schooling data, no statistically relevant correlation was established ( $p > 0.05$ ). Nonetheless, it highlights the importance for publicizing preventive measures related to oral health concerns through various educational initiatives. The high proportion of educated subjects showcases this necessity even more prominently.

The majority of participants (82) are married and 91% of the sample is from a rural area, indicating stable social and geographical characteristics with mean values for location (1.07) and social state

(1.84). An analysis revealed no statistically significant correlation between survey responses and either social state or location when  $p > 0.05$ . Understanding these demographic variables can provide a foundation for tailoring interventions to specific geographic or societal contexts.

To sum up, this research offers valuable insights into the dental health scenario of Saudi Arabia from a demographic stance. While there exist robust connections between survey outcomes and age, nationality, and educational background, an in-depth analysis along with targeted treatments is essential to grasp the intricate interplays amongst these demographics factors and oral healthcare ramifications for the populace. Additionally, the findings underscore how crucial it's to factor in social, cultural, and academic dimensions while devising public health initiatives that address oral well-being concerns among Saudis residing within borders or beyond sphere alike.

### **Conclusion:**

1. Tooth loss is a significant concern in Saudi Arabia, with estimates suggesting that a substantial portion of the population (73-78%) may lose all their teeth. This highlights the critical need for targeted responses to address oral health issues throughout the country.
2. Periodontal disease and dental caries are the primary reasons for tooth loss in Saudi Arabia, affecting 30-50% and 24-70% of individuals respectively. The high prevalence of these oral health issues emphasizes the importance of early intervention and preventive measures to manage them effectively.
3. The study highlights the difficulties faced by essential dental restorations in managing tooth loss due to factors such as cost, limited access and cultural beliefs. This underscores the need for laws and initiatives that can enhance accessibility of dental care at reasonable rates within Saudi Arabia.
4. The research has found that age and nationality can significantly affect attitudes toward the questionnaire answers. Specifically, there is a statistically significant relationship between participants' responses and their age, while nationality also plays a crucial role in shaping different types of responses from individuals. Therefore, understanding these demographic factors is essential for developing tailored oral health therapies that effectively cater to people's unique needs based on their backgrounds.
5. Dental implants boast a 96% success rate and are widely considered the optimal solution for replacing missing teeth. Nevertheless, awareness gaps worldwide exist due to obstacles such as surgical fears and costs outlined in this report. These findings underscore the importance of targeted awareness initiatives alongside other measures designed to boost access to and acceptance of dental implants, with specific attention needed in areas like Saudi Arabia.

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