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## ORIGINAL ARTICLE

# Contemporary teaching of direct posterior composite restorations in Saudi dental schools

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## KEYWORDS

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**Abstract** The teaching of posterior composites has undergone considerable assessment and refinement in well-developed countries in recent years. However, little information exists on this teaching in Arab countries. *Aim of this study:* The aim of this study was to investigate the teaching of direct posterior composite restorations to undergraduate dental students in Kingdom of Saudi Arabia (KSA). *Method:* An online survey was developed and distributed to 17 Saudi dental schools. The topic of the survey sought information related to current teaching of direct posterior composite restorations in undergraduate teaching programs. *Results:* Responses were received from 13 schools (response rate = approximately 76%). All respondent dental schools taught the same types of restorations, however there were some variations regarding contraindications of such restorations. In certain dental schools, outdated knowledge was taught related to cavity specifications such as beveling of occlusal margins, the use of clear plastic matrix band and light reflecting wedges. There was shortening of knowledge related to light curing technologies as well as different adhesive systems. Nano-filled dental composite was not taught in approximately half of the respondent schools. Also, the rush into teaching of bulk-fill placement technique was noted. *Conclusions:* Among Saudi dental schools, there may be some degree of variation in the teaching of posterior composite restorations. Although, some teaching shortcomings were noted, the overall extent and content taught to dental students in KSA may provide enough knowledge that may be essential for preclinical and clinical practice of the direct posterior composite restorations.

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## 1. Introduction

Various materials have been used in direct restorations of posterior teeth, such as amalgam and composite resin.<sup>1</sup> Despite their functional durability<sup>2</sup>, amalgam restorations have been questioned in recent years due to the incorporation of mercury.<sup>3,4</sup> In addition, there is a shift toward minimally invasive management of carious lesions.<sup>5</sup> And, that may not make

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amalgam the material of choice for this approach due to the need to sacrifice non-carious tooth structure to promote the retention of amalgam restorations.<sup>1</sup>

Previously, composite materials have been regarded as not suitable for posterior restorations.<sup>6</sup> And, that was reflected on teaching of such a subject in dental schools. In 1989, a worldwide survey noted that, posterior composite restorations were not taught in more than 90% of dental schools.<sup>7</sup> That was attributed to concerns about the longevity and performance of the composite in posterior teeth.<sup>8</sup> Further surveys of North American and European dental schools carried out in 1998 showed limited and variant clinical experience in the placement of posterior composites among undergraduate students.<sup>9,10</sup> However, that was in contrast to American Dental Association Statement (1998) which recommended the use of composite in limited sized posterior restorations.<sup>11</sup>

Surveys of Northern American and European dental schools performed in 2004/2005 found an increase in teaching posterior composites compared to nineties. However, most of posterior restorations placed by dental students was of amalgam.<sup>12-15</sup> In that era, the physical and mechanical properties of composites and related adhesive technologies have been considerably improved.<sup>16</sup> In addition, studies that showed less annual failure rate<sup>17</sup> and increased survival rate<sup>18</sup> of posterior composite compared to amalgam restorations showed an increasing popularity of posterior composite.

In 2007, the British Association of Teachers of Conservative Dentistry (BATCD) recommended that, composite should be taught as the 'material of choice' when restoring posterior teeth. Also, BATCD established guidelines on the teaching of posterior composite restorations among members. These guidelines hoped to develop and harmonize educational criteria in the teaching of posterior composite restorations not only within the United Kingdom but also on a worldwide level.<sup>19</sup> In 2010, there was an accelerated shift to the teaching of posterior composite restorations. Also, it was noted that, within some schools in UK, the teaching of certain techniques should be reviewed.<sup>20</sup>

Recently, the academy of operative dentistry European section (AODES) considered adhesively bonded resin composites of suitable composition and properties to be the "material of choice" for use in direct restorations of posterior teeth.<sup>21</sup> For dental students – who will be practicing dentists in the near future – an updated and standardized learning related to this subject may be very essential.

In the kingdom of Saudi Arabia (KSA), there may be no such associations to outline their own guidelines in regard to conservative dentistry. The key sources of information from which many dentists derive guidance and skills on the use of materials and techniques are the educational and clinical experiences gained at dental school.<sup>8</sup> Therefore, investigating the teaching criteria of posterior composite restorations may be the first step toward establishing clear standards that may be beneficial to the dental students, practitioners, colleges' staff members and the whole dental educational process.

The purpose of this study was to investigate the contemporary teaching of direct posterior composite restorations in dental colleges in KSA.

## 2. Methods

The methodology was similar to that reported by Lynch CD. et al.<sup>20</sup> In September 2014, an email invitation was sent to the individual identified as being responsible for the delivery of operative dentistry teaching programs within each school of 17 governmental dental schools in KSA. This invitation was to complete an internet-based survey constructed using the SurveyMonkey site. Survey sought information related to the teaching of direct posterior composite restorations. Survey was designed to include closed statements where respondents were given a number of possible responses to a statement.

## 3. Survey sections

- (I) Types of composite restorations:
  - Q1: Teaching of the placement of composite in one-surface cavities class I in molars and premolars.
  - Q2: Teaching of the placement of composite in two-surfaces occluso-proximal cavities in molars and premolars.
  - Q3: Teaching placement of composite in three-surfaces occluso-proximal cavities in molars and premolars.
  - Q4: Teaching placement of composite to build up badly destructed molars and premolars.
- (II) Taught differences in cavity preparation in comparison to cavities for dental amalgam restorations:
  - Q5: Retention form created.
  - Q6: Extension for prevention.
  - Q7: Beveled occlusal margins of class I in molars and premolars.
  - Q8: Beveled gingival margin of proximal box in class II cavities in molars and premolars.
  - Q9: Slot-type' cavities.
- (III) Posterior composite restorations placement techniques:
  - Q10: Horizontal incremental techniques.
  - Q11: Oblique incremental techniques.
  - Q12: Open sandwich technique.
  - Q13: Closed sandwich technique.
  - Q14: Bulk-fill techniques.
- (IV) Matrix and wedging techniques taught when placing occluso-proximal composites:
  - Q15: The use of thin or ultra-thin circumferential metal matrix bands.
  - Q16: The use of clear matrix bands and light transmitting wedges.
  - Q17: The use of sectional matrix system.
- (V) Types of composite resin materials taught:
  - Q18: Microhybrid composites.
  - Q19: Nanohybrid composites.
  - Q20: Nano-composites.
- (VI) Types of bonding systems taught:
  - Q21: Three-step etch and rinse adhesives.
  - Q22: Two-step etch and rinse adhesives.
  - Q23: Two-step self-etch adhesives.
  - Q24: One-step self-etch adhesives.
- (VII) Teaching the use of rubber dam in Moisture control during posterior composite placement:
  - Q25: Rubber dam use,

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