

*Original Research Article*

# Dental Students' Perception and Opinion on Various Teaching Methods being Implemented in Dental Schools; A Survey-Based Study

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**Introduction:** Dental education has evolved to a great deal over the course of the past few decades. Several methods and techniques have been utilized to achieve the desired learning outcomes at the end of the course. **Materials and methods:** This is a cross-sectional study, which utilized a closed-ended questionnaire. The questionnaire was constructed online using Google forms and began with questions related to demographics, including gender, educational level, and GPA. Furthermore, questions were asked about the perception of students about different teaching methods being asked separately, factors affecting their opinion, and suggestions to improve or incorporate additional methods. **Results:** A total of 721 male and female students filled up the online survey, which comprised of 56% males and 44% females. The participants were also grouped based on dentistry level, which demonstrated that 53% were level 10, 24% were level 11 and 23% were from level 12. **Conclusions:** Lower level of dental students showed a highly significant positive attitude towards different teaching methods as compared to higher-level dental students.

**Keywords:** Dental students, Dental education, Dental curriculum.

## INTRODUCTION

Dental education has evolved to a great deal over the course of the past few decades. Several methods and techniques have been utilized in order to achieve the desired learning outcomes at the end of the course. However, dental schools in different countries have their pattern of educating students in their undergraduate courses. Dental education consists of three major components, which include theory, laboratory sessions, and clinical training. The implementation of these components takes place in various ways and forms. These methods include face-to-face lectures, group discussions, hands-on training, online learning, working on patients, and few more (Ruttermann et al, 2017; Fayaz et al, 2015).

Additional methods of teaching in dental schools include problem-based learning, using technology in delivering lectures, use of simulators and procedural demonstration, and even one to one counseling sessions. Implementation of these methods is highly dependent on certain factors, which include the culture of dental school being student-centered, teacher-centered, or a combination of both. Cultural variations also play a limited role in determining the style of teaching in these dental schools (Amin et al, 2017; Bakr et al, 2015).

Several studies have taken place to determine the opinion and perception of dental students towards the use of different teaching methods in dental schools. Methods including critical thinking exercises, hands-on experiences and visual aids were considered to be highly effective in knowledge delivery when conducted a survey among American dental students (Wilkinson et al, 2015). Furthermore, researchers have investigated the matter of technology use in dental education. They conducted a survey among Australian dental students, which revealed that the incorporation of technology resulted in positive feedback from them (Bakr et al, 2015).

Team-based learning has also been a newly developed teaching method in several dental schools. When the results of team-based learning were compared with that of traditional methods of teaching, slightly better results were achieved by the students who underwent team-based learning. Their feedback on this system was also positive (Echeto et al, 2015). Several schools have also utilized a blended system of knowledge delivery, which consists of video recordings of practical demonstrations and theoretical modules. When inquired about the feedback from the students who received

this model, positive responses were received (Reissmann et al, 2015).

A study conducted in Nepal among the undergraduate dental students aimed to assess the reception of problem-based learning. It is one of the most widely used methods of knowledge delivery among schools that support student-centered education. The introduction of PBL among Nepalese dental students resulted in positive feedback from them (Rimal et al, 2015).

## STUDY HYPOTHESES

Dental students in Riyadh support the technology-based education system as compared to traditional methods.

## AIMS OF THE STUDY

- To determine the opinion of dental students about different teaching methods used in different dental schools in Riyadh.
- To assess the factors associated with the liking and disliking of that particular teaching method.
- To compare the findings on the basis of dentistry levels and university.

## MATERIALS AND METHODS

### Study Design

This is a cross-sectional study, which utilized a closed-ended questionnaire.

### Questionnaire Design

The questionnaire was constructed online using Google forms and began with questions related to demographics, including gender, educational level and GPA. Furthermore, questions were asked about the perception of students about different teaching methods being asked separately, factors affecting their opinion and suggestions to improve or incorporate additional methods.

### Study Sample

This study was targeted towards the dental students of Riyadh city from Riyadh Elm University and AlFarabi dental college, therefore all dental students willing to participate were requested to fill up the questionnaire. A total of 1000 Riyadh based dental students were targeted in this study. The survey was sent using online communication including social media.

### Validity and Reliability of Questionnaire

The questionnaire was sent to the experts in research, which include a few faculty members of REU in order to confirm the validity. As far as the reliability is concerned, a pilot study was conducted using 20 online questionnaires filled randomly by university students. Reliability was tested using Chronbach's coefficient alpha in the Statistical Package for Social Sciences (SPSS) version 19.

### Statistical Analysis

Collected data was transferred from Google sheets to SPSS version 19, where descriptive as well as inferential statistics

were conducted. Comparisons between groups were made with the value of significance kept under 0.05.

## IRB Approval

This proposal was registered to the REU research center web portal followed by applying for an IRB approval before the collection of data.

## RESULTS

A total of 721 male and female students filled up the online survey, which comprised of 56% males and 44% females. The participants were also grouped on the basis of dentistry level, which demonstrated that 53% were level 10, 24% were level 11 and 23% were from level 12.

The participants were also grouped on the basis of their GPAs, which revealed that 11% had less than 3, 65% had 3-4 and 24% had 4-5. Finally, 51% belonged to REU and 49% to AlFarabi.

### Validity and Reliability of the Questionnaire

According to the experts in REU, we made minor changes to our questionnaire before we distributed it to the study participants. As far as the reliability is concerned, we performed Chronbach's coefficient alpha in SPSS and the value retrieved was 0.74, which is acceptable to carry out the data collection after the pilot study.

## DISCUSSION

This study aimed to assess the perception of dental students towards different teaching methods being used in dental schools. We divided the sample into four subgroups as mentioned above. However, we compared our findings on the basis of dentistry levels and university. As far as levels of dentistry were concerned, lower level of students demonstrated a significantly positive attitude and perception about using various teaching methods including face to face lectures, group discussions, hands-on training, problem-based learning, use of technology, and simulators and one on one counseling. However, the senior dental students were not in favor of using technology, which was contrary to what we found in a study conducted by Eynon, Perryer & Walmsley (2003).

A large majority of junior dental students were in the support of group learning, which was also revealed by a study carried out by Schonwetter et al (2006). Similar findings were recorded by Pileggi & O'Neill (2008) where they found a strong evidence of academic performance improvement after continuous group learning sessions. A research conducted by Aly, Elen & Willems (2004) demonstrated that the final year students were satisfied with the face to face instructional medium of dental courses. However, our results suggest the opposite, as the final year students did not show a positive attitude towards the above-mentioned teaching method.

The second part of the research was to compare our study findings among the students of Riyadh Elm University and AlFarabi dental college, which revealed that the students of REU showed highly significant interest in group discussions, problem-based learning, use of technology and simulators.

Although there was a healthy percentage of students from AlFarabi college who 'agreed' to majority of the teaching methods, but the large majority of REU students 'strongly agreed' to almost all types of teaching methods.

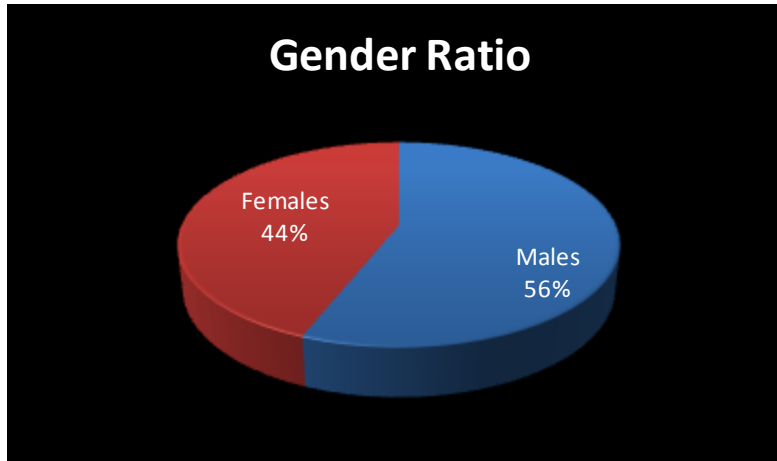


Figure 1: Gender ratio of the study participants

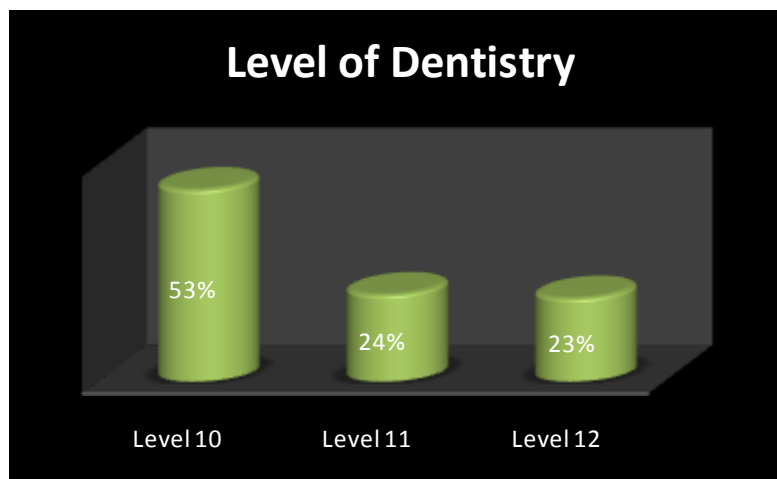


Figure 2: Dentistry levels of the study participants

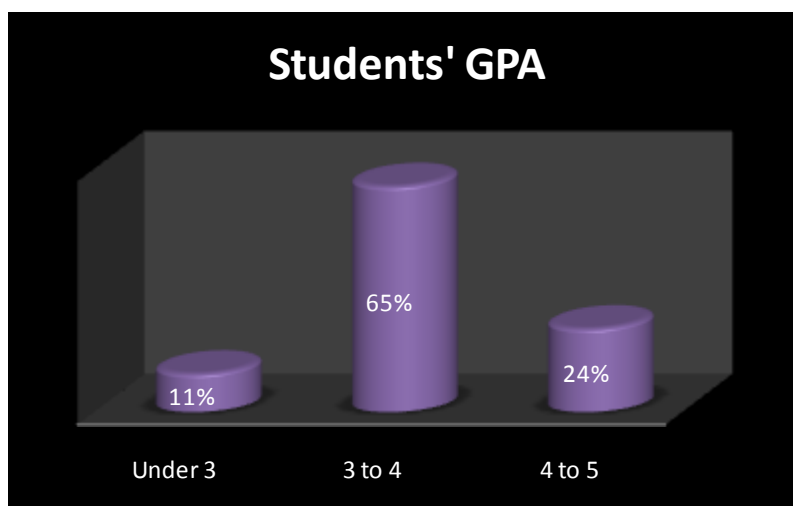


Figure 3: GPAs of the study participants

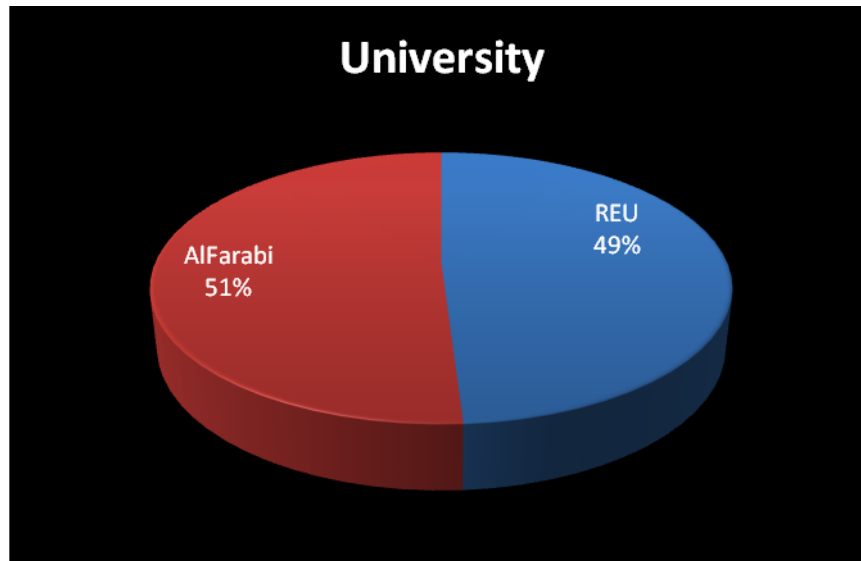


Figure 4: Ratio of students from two universities

Table 1: Survey responses comparison on the basis of level of dentistry

Item	Level 10	Level 11	Level 12	P- Value
Face to face lectures are effective in delivering knowledge in dental education.	Strongly Agree 57%	Strongly Agree 15%	Strongly Agree 12%	0.000
	Agree 30%	Agree 47%	Agree 49%	
	Neutral 4%	Neutral 24%	Neutral 22%	
	Disagree 4%	Disagree 12%	Disagree 11%	
	Strongly Disagree 5%	Strongly Disagree 1%	Strongly Disagree 7%	
Group discussions are effective in delivering knowledge in dental education.	Strongly Agree 63%	Strongly Agree 12%	Strongly Agree 15%	0.000
	Agree 21%	Agree 49%	Agree 46%	
	Neutral 8%	Neutral 23%	Neutral 23%	
	Disagree 5%	Disagree 10%	Disagree 12%	
	Strongly Disagree 3%	Strongly Disagree 6%	Strongly Disagree 5%	
Hands on training are effective in delivering knowledge in dental education.	Strongly Agree 63%	Strongly Agree 16%	Strongly Agree 17%	0.000
	Agree 20%	Agree 46%	Agree 47%	
	Neutral 7%	Neutral 21%	Neutral 17%	
	Disagree 5%	Disagree 10%	Disagree 10%	
	Strongly Disagree	Strongly Disagree	Strongly Disagree	

	4%	8%	8%	
<b>Problem based learning is effective in delivering knowledge in dental education.</b>	<b>Strongly Agree</b> 61%  <b>Agree</b> 23%  <b>Neutral</b> 8%  <b>Disagree</b> 3%  <b>Strongly Disagree</b> 4%	<b>Strongly Agree</b> 15%  <b>Agree</b> 49%  <b>Neutral</b> 25%  <b>Disagree</b> 7%  <b>Strongly Disagree</b> 5%	<b>Strongly Agree</b> 16%  <b>Agree</b> 41%  <b>Neutral</b> 23%  <b>Disagree</b> 7%  <b>Strongly Disagree</b> 14%	<b>0.000</b>
<b>Using technology is effective in delivering knowledge in dental education.</b>	<b>Strongly Agree</b> 62%  <b>Agree</b> 24%  <b>Neutral</b> 6%  <b>Disagree</b> 3%  <b>Strongly Disagree</b> 4%	<b>Strongly Agree</b> 17%  <b>Agree</b> 48%  <b>Neutral</b> 21%  <b>Disagree</b> 10%  <b>Strongly Disagree</b> 5%	<b>Strongly Agree</b> 17%  <b>Agree</b> 39%  <b>Neutral</b> 26%  <b>Disagree</b> 7%  <b>Strongly Disagree</b> 11%	<b>0.000</b>
<b>Use of simulators is effective in delivering knowledge in dental education.</b>	<b>Strongly Agree</b> 63%  <b>Agree</b> 23%  <b>Neutral</b> 7%  <b>Disagree</b> 3%  <b>Strongly Disagree</b> 4%	<b>Strongly Agree</b> 19%  <b>Agree</b> 48%  <b>Neutral</b> 19%  <b>Disagree</b> 8%  <b>Strongly Disagree</b> 5%	<b>Strongly Agree</b> 15%  <b>Agree</b> 39%  <b>Neutral</b> 29%  <b>Disagree</b> 7%  <b>Strongly Disagree</b> 11%	<b>0.000</b>
<b>One on one counseling is effective in dental education.</b>	<b>Strongly Agree</b> 64%  <b>Agree</b> 23%  <b>Neutral</b> 6%  <b>Disagree</b> 1%  <b>Strongly Disagree</b> 5%	<b>Strongly Agree</b> 17%  <b>Agree</b> 46%  <b>Neutral</b> 25%  <b>Disagree</b> 10%  <b>Strongly Disagree</b> 3%	<b>Strongly Agree</b> 12%  <b>Agree</b> 45%  <b>Neutral</b> 27%  <b>Disagree</b> 5%  <b>Strongly Disagree</b> 11%	<b>0.000</b>
<b>Critical thinking exercises are effective in delivering knowledge in dental education.</b>	<b>Strongly Agree</b> 60%  <b>Agree</b> 24%  <b>Neutral</b> 6%  <b>Disagree</b> 6%	<b>Strongly Agree</b> 18%  <b>Agree</b> 47%  <b>Neutral</b> 23%  <b>Disagree</b> 5%	<b>Strongly Agree</b> 14%  <b>Agree</b> 42%  <b>Neutral</b> 21%  <b>Disagree</b> 15%	<b>0.000</b>

	Strongly Disagree 5%	Strongly Disagree 8%	Strongly Disagree 2%	
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**Table 2: Survey response comparison on the basis of universities**

Item	REU	AlFarabi	P- Value
Face to face lectures are effective in delivering knowledge in dental education.	Strongly Agree 66%	Strongly Agree 9%	0.000
	Agree 31%	Agree 46%	
	Neutral 2%	Neutral 22%	
	Disagree 0%	Disagree 13%	
	Strongly Disagree 0%	Strongly Disagree 9%	
Group discussions are effective in delivering knowledge in dental education.	Strongly Agree 75%	Strongly Agree 6%	0.000
	Agree 23%	Agree 42%	
	Neutral 1%	Neutral 29%	
	Disagree 0%	Disagree 15%	
	Strongly Disagree 0%	Strongly Disagree 8%	
Hands on training are effective in delivering knowledge in dental education.	Strongly Agree 76%	Strongly Agree 9%	0.000
	Agree 22%	Agree 42%	
	Neutral 1%	Neutral 24%	
	Disagree 0%	Disagree 13%	
	Strongly Disagree 0%	Strongly Disagree 12%	
Problem based learning is effective in delivering knowledge in dental education.	Strongly Agree 71%	Strongly Agree 10%	0.000
	Agree 27%	Agree 40%	
	Neutral 2%	Neutral 28%	
	Disagree 0%	Disagree 10%	
	Strongly Disagree 1%	Strongly Disagree 12%	
Using technology is effective in delivering knowledge in dental education.	Strongly Agree 72%	Strongly Agree 13%	0.000
	Agree	Agree	

	<p>24%</p> <p><b>Neutral</b> 4%</p> <p><b>Disagree</b> 0%</p> <p><b>Strongly Disagree</b> 0%</p>	<p>41%</p> <p><b>Neutral</b> 23%</p> <p><b>Disagree</b> 11%</p> <p><b>Strongly Disagree</b> 12%</p>	
<b>Use of simulators is effective in delivering knowledge in dental education.</b>	<p><b>Strongly Agree</b> 72%</p> <p><b>Agree</b> 23%</p> <p><b>Neutral</b> 5%</p> <p><b>Disagree</b> 0%</p> <p><b>Strongly Disagree</b> 0%</p>	<p><b>Strongly Agree</b> 14%</p> <p><b>Agree</b> 41%</p> <p><b>Neutral</b> 25%</p> <p><b>Disagree</b> 10%</p> <p><b>Strongly Disagree</b> 11%</p>	<b>0.000</b>
<b>One on one counseling is effective in dental education.</b>	<p><b>Strongly Agree</b> 75%</p> <p><b>Agree</b> 20%</p> <p><b>Neutral</b> 5%</p> <p><b>Disagree</b> 0%</p> <p><b>Strongly Disagree</b> 0%</p>	<p><b>Strongly Agree</b> 10%</p> <p><b>Agree</b> 46%</p> <p><b>Neutral</b> 26%</p> <p><b>Disagree</b> 8%</p> <p><b>Strongly Disagree</b> 11%</p>	<b>0.000</b>
<b>Critical thinking exercises are effective in delivering knowledge in dental education.</b>	<p><b>Strongly Agree</b> 69%</p> <p><b>Agree</b> 24%</p> <p><b>Neutral</b> 7%</p> <p><b>Disagree</b> 0%</p> <p><b>Strongly Disagree</b> 0%</p>	<p><b>Strongly Agree</b> 12%</p> <p><b>Agree</b> 42%</p> <p><b>Neutral</b> 20%</p> <p><b>Disagree</b> 0%</p> <p><b>Strongly Disagree</b> 0%</p>	<b>0.000</b>

This may be due to the fact that every dental school carries its own learning and teaching environment, which reflects on the students' perception eventually (Haden et al, 2006).

### CONCLUSIONS

- Lower level of dental students showed a highly significant positive attitude towards different teaching methods as compared to higher-level dental students.
- Students of REU showed a significantly positive and strong attitude and perception towards the use of

technology, simulator, group-based, and problem-based learning.

- There is a need to generalize the teaching methods in different dental schools in order to provide the students with a uniform style of knowledge delivery.

### CONFLICT OF INTEREST

There was no conflict of interest among the authors.

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