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RESEARCH ARTICLE

DENTAL STUDENTS' PERCEPTION AND OPINION ON VARIOUS TEACHING METHODS BEING IMPLEMENTED IN DENTAL SCHOOLS; A SURVEY BASED STUDY

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ABSTRACT

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.

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INTRODUCTION

Dental education has evolved to a great deal over the course of 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 own pattern of educating students in their undergraduate courses. Dental education consists of three major components, which include theory, laboratory sessions and clinical training. 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 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).

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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 into 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 compared the results of team based learning with traditional methods of teaching, slight better results were achieved by the students who underwent team based learning. Their feedback of this system was also positive (Echeto *et al.,* 2015). Several schools have also utilized a blended system of knowledge delivery, which consists of video recording 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 most widely used methods of knowledge delivery among schools that support student-centered education. 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 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 Al Farabi dental college, therefore all dental students willing to participant 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 721male 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 3-4and 24% had 4-5. Finally, 51% belonged to REU and 49% to AlFarabi.

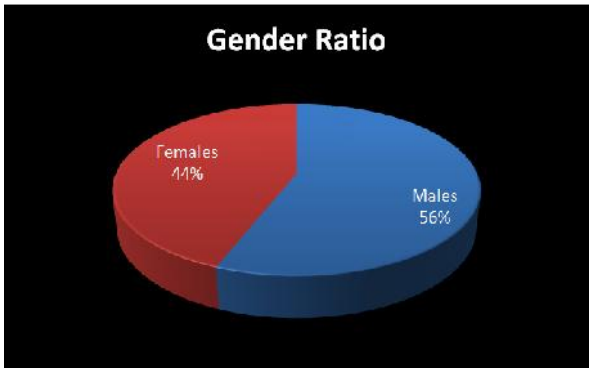

Figure 1. Gender ratio of the study participants

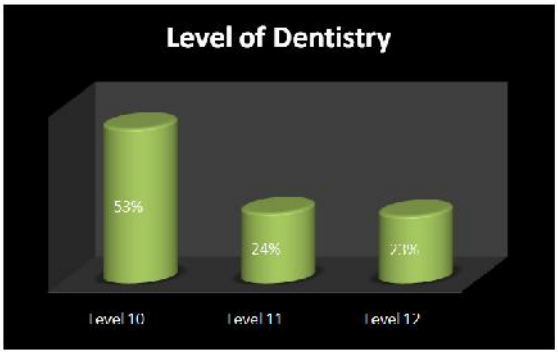

Figure 2. Dentistry levels of the study participants

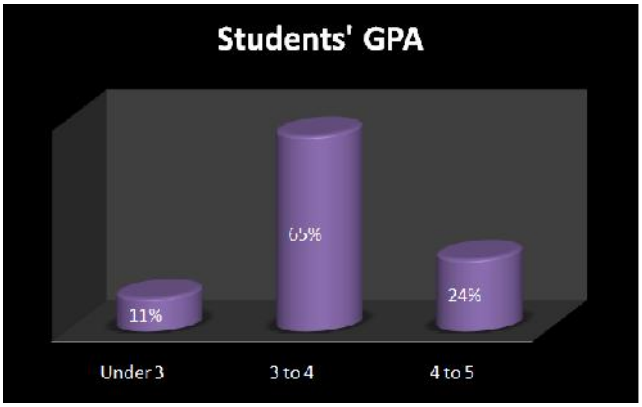

Figure 3. GPAs of the study participants

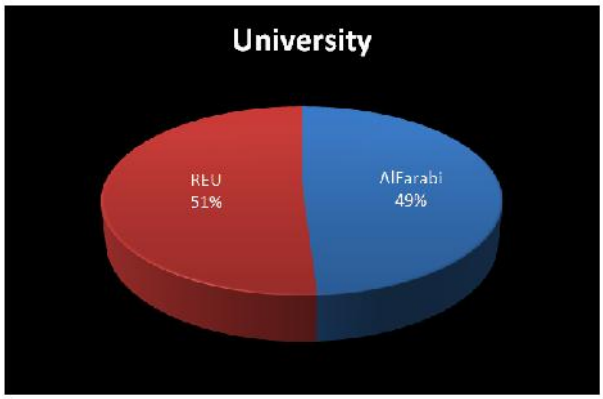

Figure 4. Ratio of students from two universities

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.

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% Agree 30% Neutral 4% Disagree 4% Strongly Disagree 5%	Strongly Agree 15% Agree 47% Neutral 24% Disagree 12% Strongly Disagree 1%	Strongly Agree 12% Agree 49% Neutral 22% Disagree 11% Strongly Disagree 7%	0.000
Group discussions are effective in delivering knowledge in dental education.	Strongly Agree 63% Agree 21% Neutral 8% Disagree 5% Strongly Disagree 3%	Strongly Agree 12% Agree 49% Neutral 23% Disagree 10% Strongly Disagree 6%	Strongly Agree 15% Agree 46% Neutral 23% Disagree 12% Strongly Disagree 5%	0.000
Hands on training are effective in delivering knowledge in dental education.	Strongly Agree 63% Agree 20% Neutral 7% Disagree 5% Strongly Disagree 4%	Strongly Agree 16% Agree 46% Neutral 21% Disagree 10% Strongly Disagree 8%	Strongly Agree 17% Agree 47% Neutral 17% Disagree 10% Strongly Disagree 8%	0.000
Problem based learning is effective in delivering knowledge in dental education.	Strongly Agree 61% Agree 23% Neutral 8% Disagree 3% Strongly Disagree 4%	Strongly Agree 15% Agree 49% Neutral 25% Disagree 7% Strongly Disagree 5%	Strongly Agree 16% Agree 41% Neutral 23% Disagree 7% Strongly Disagree 14%	0.000
Using technology is effective in delivering knowledge in dental education.	Strongly Agree 62% Agree 24% Neutral 6% Disagree 3% Strongly Disagree 4%	Strongly Agree 17% Agree 48% Neutral 21% Disagree 10% Strongly Disagree 5%	Strongly Agree 17% Agree 39% Neutral 26% Disagree 7% Strongly Disagree 11%	0.000
Use of simulators is effective in delivering knowledge in dental education.	Strongly Agree 63% Agree 23% Neutral 7% Disagree 3% Strongly Disagree 4%	Strongly Agree 19% Agree 48% Neutral 19% Disagree 8% Strongly Disagree 5%	Strongly Agree 15% Agree 39% Neutral 29% Disagree 7% Strongly Disagree 11%	0.000
One on one counseling is effective in dental education.	Strongly Agree 64% Agree 23% Neutral 6% Disagree 1% Strongly Disagree 5%	Strongly Agree 17% Agree 46% Neutral 25% Disagree 10% Strongly Disagree 3%	Strongly Agree 12% Agree 45% Neutral 27% Disagree 5% Strongly Disagree 11%	0.000
Critical thinking exercises are effective in delivering knowledge in dental education.	Strongly Agree 60% Agree 24% Neutral 6% Disagree 6% Strongly Disagree 5%	Strongly Agree 18% Agree 47% Neutral 23% Disagree 5% Strongly Disagree 8%	Strongly Agree 14% Agree 42% Neutral 21% Disagree 15% Strongly Disagree 2%	0.000

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% Agree 31% Neutral 2% Disagree 0% Strongly Disagree 0%	Strongly Agree 9% Agree 46% Neutral 22% Disagree 13% Strongly Disagree 9%	0.000
Group discussions are effective in delivering knowledge in dental education.	Strongly Agree 75% Agree 23% Neutral 1% Disagree 0% Strongly Disagree 0%	Strongly Agree 6% Agree 42% Neutral 29% Disagree 15% Strongly Disagree 8%	0.000
Hands on training are effective in delivering knowledge in dental education.	Strongly Agree 76% Agree 22% Neutral 1% Disagree 0% Strongly Disagree 0%	Strongly Agree 9% Agree 42% Neutral 24% Disagree 13% Strongly Disagree 12%	0.000
Problem based learning is effective in delivering knowledge in dental education.	Strongly Agree 71% Agree 27% Neutral 2% Disagree 0% Strongly Disagree 1%	Strongly Agree 10% Agree 40% Neutral 28% Disagree 10% Strongly Disagree 12%	0.000
Using technology is effective in delivering knowledge in dental education.	Strongly Agree 72% Agree 24% Neutral 4% Disagree 0% Strongly Disagree 0%	Strongly Agree 13% Agree 41% Neutral 23% Disagree 11% Strongly Disagree 12%	0.000
Use of simulators is effective in delivering knowledge in dental education.	Strongly Agree 72% Agree 23% Neutral 5% Disagree 0% Strongly Disagree 0%	Strongly Agree 14% Agree 41% Neutral 25% Disagree 10% Strongly Disagree 11%	0.000
One on one counseling is effective in dental education.	Strongly Agree 75% Agree 20% Neutral 5% Disagree 0% Strongly Disagree 0%	Strongly Agree 10% Agree 46% Neutral 26% Disagree 8% Strongly Disagree 11%	0.000
Critical thinking exercises are effective in delivering knowledge in dental education.	Strongly Agree 69% Agree 24% Neutral 7% Disagree 0% Strongly Disagree 0%	Strongly Agree 12% Agree 42% Neutral 20% Disagree 0% Strongly Disagree 0%	0.000

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 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 the 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. 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. 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).

Conclusion

- Lower level of dental students showed a highly significantly 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 uniform style of knowledge delivery.

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