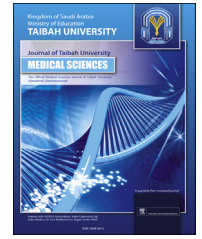




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Educational Article

Students' perspectives on the relevance of internet-based educational videos in dental education



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المخلص

أهداف البحث: تهدف هذه الدراسة المقطعية إلى الحصول على تصورات طلبة السنة الثالثة بطب الأسنان بجامعة الدمام حول فائدة استخدام عروض الفيديو التعليمية المأخوذة من الإنترنت للمساعدة في محاضرات علم أحياء الفم.

طرق البحث: أجريت هذه الدراسة بكلية طب الأسنان بجامعة الدمام خلال شهر مارس ٢٠١٤م. وزعت استبانة مكونة من عشرة أسئلة على جميع المشاركين. تتعلق الأسئلة الثمانية الأولى بفائدة عروض الفيديو خلال المحاضرات، وقسمت الردود المطلوبة إلى (موافق/غير موافق). بالنسبة للسؤالين الأخيرين (عدد عروض الفيديو التي يحبذ اضافتها والفترة الزمنية المخصصة لعروض الفيديو في كل محاضرة)، قدمت خيارات متعددة للاختيار. وحللت البيانات إحصائياً باستخدام اختبار مربع كاي.

النتائج: بلغ حجم العينة ٧٠ (٣٩ طالباً و ٣١ طالبة) ومعدل الاستجابة الكلي ٩٧٪. نظر أغلب الطلبة بإيجابية إلى دور عروض الفيديو في مساعدة المحاضرات. ولكن، وجدت فروق ذات دلالة إحصائية ($p < 0.05$) بين الطلاب والطالبات فيما يتعلق بفهم المحاضرات مع/ بدون عروض الفيديو، وكذلك فيما يتعلق بتذكر المعرفة المكتسبة من المحاضرات بوجود عروض الفيديو.

الاستنتاجات: يجب إضافة عروض الفيديو إلى المحاضرات، مع الأخذ بعين الاعتبار أن تكون هذه العروض متوافقة مع مخرجات التعلم المرجوة من المحاضرة.

الكلمات المفتاحية: عروض الفيديو؛ تعليم طب الأسنان؛ علم أحياء الفم؛ تصورات الطلبة

Abstract

Objectives: This cross-sectional study sought to obtain the perceptions of third year students of the University of Dammam faculty of dentistry about the usefulness of Internet-based educational videos in assisting oral biology lectures.

Methods: The study was conducted at the College of Dentistry, University of Dammam during March 2014. A validated questionnaire containing 10 questions was distributed to all of the participants. The first eight questions, related to the usefulness of videos during lectures, required dichotomized (agree/disagree) responses. For the last two questions (number of videos to be added and the time period allocated to these videos in each lecture), multiple options were provided for selection. The data were analysed statistically by using the chi-square test.

Results: The sample size was 70 students (39 male and 31 female), with an overall response rate of 97%. The majority of students positively perceived the role of videos in assisting lectures. However, significant differences ($p < 0.05$) were found between male and female students regarding their understanding of lectures with/without videos and retention of knowledge gained from lectures with videos.

Conclusions: Videos should be included in the lectures, so long as any video included is analogous to the desired learning outcomes of the lecture.

Keywords: Dental education; Oral biology; Students' perceptions; Videos

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Introduction

Teaching medicine and dentistry to undergraduates is a specialized job, as future doctors/dentists will be the frontline health care providers. The role of doctors in academia is now considered to be a fundamental professional activity that should not be undertaken coincidentally.¹ Conventionally, there has been a deficiency in proper teacher education in the field of medicine.² Therefore, it is obligatory for every educator to take steps to cultivate and conserve appropriate and up-to-date teaching skills.³ Earlier, instructors' access to technology was restricted due to cost and competency; however, currently, access to technology is easier than ever, and it gives the educators an opportunity to deliver their teaching in a variety of ways.⁴ Many new audio-visual aids are now available to educators,⁵ and academics should take advantage of these tools to improve the teaching-learning nexus. One such tool is video technology.

The use of video in teaching is not new, but many instructors still do not take advantage of this useful aid. Video provides an audio and visual stimulus covering different learning methodologies that were outlined in the Visual, Aural, Read/Write, Kinaesthetic (VARK) analysis questionnaire.⁶ Video technology has previously been found useful for patient education⁷ and has several advantages, including the capability to be forwarded, reversed and watched repetitively at the user's convenience.⁸ In light of these wide-ranging advantages, the American Dental Association (ADA) has recently developed its official channel on YouTube, which consists of number of videos uploaded on the website that cover important topics such as oral hygiene maintenance, pregnancy and oral health care and oral care for the elderly and infants.⁹ According to a recent report, 50% of the Saudi Arabian population is <25 years old and has been quite appropriately called the "youth bulge".¹⁰ It is logical to anticipate the inclination of youth towards technology. It has been reported previously from Saudi Arabia that students try to actively engage in any activity in which technology plays a part.¹¹ Therefore, it becomes imperative for educators to use recent technological advancements in their teaching.

In the field of dental education, several studies have been performed to compare the effectiveness of educational videos in teaching clinical skills, and they have demonstrated the advantage of video clips in overall teaching and learning process.^{12 and 13} However, no study has been performed to obtain student perspectives regarding the role of internet-based educational videos in teaching oral biology to dental students. Therefore, this study was carried out to obtain the viewpoint of third year male and female dental students of College of Dentistry, University of Dammam through a questionnaire about the usefulness of educational videos in supplementing oral biology lectures.

Materials and Methods

Oral biology is taught during the first semester to third year dental students of the College of Dentistry, University of Dammam. Various modern educational tools such as an online study website (blackboard), multi-media and videos are used along with traditional lectures to ensure an optimum student learning environment. Videos shown in the lectures are obtained from various sources, namely, YouTube, Google videos and Facebook. Videos selected for the lectures are carefully sought out and then viewed by all of the members of department to confirm that the content is useful and is parallel to the learning outcomes of the lecture.

This cross-sectional study took place in College of Dentistry, University of Dammam in March 2014. According to the inclusion criteria, only third year male and female dental students were involved in the study as the oral biology instructional videos being assessed via questionnaire were only offered to these specific students. No specific exclusion criteria existed for this study. Ethical approval (Ref: EA 2013014) was acquired before initiating the study. Informed consent was taken from the students who volunteered to take part in the study and all of the ethical protocols were strictly followed.

A questionnaire was developed to obtain student perspectives about various aspects of the usefulness of videos in teaching oral biology courses. For the validation of the questionnaire, face validity was first established by inviting some faculty members belonging to the same division (who were not part of the study) to go over the questions and report if the questions effectively captured the investigated topic. Their responses were collected and confusing questions were removed from the questionnaire. The questionnaire was then piloted with students from the fourth and fifth year by selecting them randomly. Randomization was performed by drawing random numbers from an excel sheet. There were a total of 100 students in the fourth and fifth year. A list of all of the students was obtained and a random number was drawn for each student. A student was selected for the pilot if his/her number was less than 0.5. There were 43 students who were selected for the pilot survey. Reliability analysis was also performed and the value of Cronbach's alpha, α , (coefficient of reliability) was found to be 0.9, showing good consistency.

The final version of the questionnaire contained ten closed-ended questions, eight requiring dichotomized (agree/disagree) responses and two questions (provided with multiple response options) asking about the number of videos to be included and time assigned for those videos during the lecture.

The purpose of the study was explained to the participants and individual enquiries were answered. Questionnaires were distributed to all of the third year students (male and female) who were present on the day of the study after their respective lectures and laboratory sessions. Questionnaires were answered anonymously and no personal data except the age and gender of the participants were collected.

Statistical analysis

Data were collected and entered into spreadsheets. SPSS software (version 19.0; SPSS Inc., Chicago, IL, USA) was utilized for analyses. Chi-square test was utilized to compare

the differences between the responses of male and female third year dental students regarding the role of videos in clarifying oral biology lectures. P-values of <0.05 were considered statistically significant.

Results

The overall response rate was 97%. The study sample consisted of 70 students ($n = 70$; males: 39, females: 31). In general, a very high percentage of both male and female students perceived the inclusion of videos in the lectures to be useful. However, if the responses are considered on the basis of gender, it can be observed that for all of the questions requiring dichotomized responses, the percentage of male students who agreed about the usefulness of videos was more than their female counterparts (Q.1 – Q.8, Table 1). Significant differences ($p < 0.05$) were found between male and female dental students regarding their understanding of lectures with/without videos and retention of lectures with/without videos (Q.2 and Q.4, Table 1).

Regarding how many videos a lecture should contain among males, the majority (56%) of the students opted for two videos/lecture; (20.5%) chose one video/lecture; (17.9%) chose three videos/lecture and only 0.05% selected four videos/lecture. Among females, (38.7%) selected three videos, (32.2%) selected two videos, and (29%) selected one video per lecture (Fig. 1).

Concerning the duration of the videos added in the lecture, a majority of both of the groups selected a duration between 1 and 10 min as suitable for a 50-min lecture (Fig. 2).

Discussion

One of the essential roles of a good medical teacher is to be an effective information provider.¹⁴ It has been suggested previously that video-based teaching is appreciated and widely acknowledged by dental undergraduate students as a good way of attaining information.¹⁵ The outcomes of this study agree with the results of these previous studies, as the majority of male and female students considered the addition of videos in the lectures to be useful. The probable reason for the recognition of usefulness of video in teaching could be attributed to the fact that video leads to enhanced visualization and better understanding of the

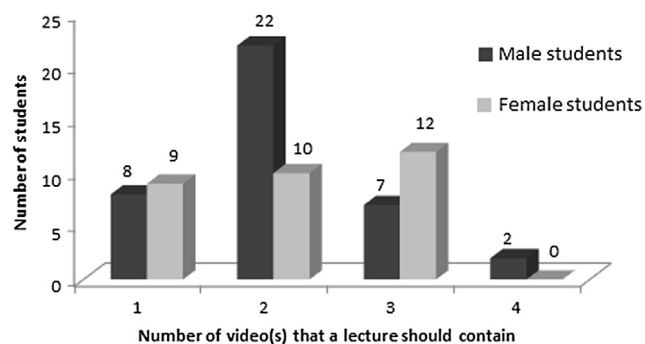


Figure 1: Showing the preference of students for number of videos to be included in the lectures.

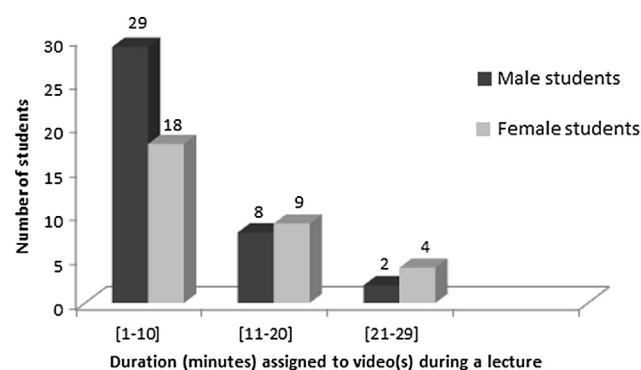


Figure 2: Showing the preference of students for time duration assigned to the videos added in the lecture.

procedures/facts being explained during teaching,¹⁶ thereby leading towards a better clarification of facts, increased interest in the lecture and easy reproduction of knowledge gained, as shown from the findings of this study.

Although the majority of male and female students agreed with all of the questions, a significantly higher percentage of male students still considered lecture with videos to be more comprehensible than and superior to (pertaining to remembrance) the lectures without videos than did their female counterparts. It is difficult to explain this trend; however, on the basis of gender psychology, it has been reported that females possess technology anxiety.¹⁷ In another previous study

Table 1: Number and percentage of male and female respondents showing significance of addition of videos in the lectures.

Question	Male students		Female students		P-value
	Agree	Disagree	Agree	Disagree	
1. Addition of a video in the lecture is useful?	39 (100%)	0 (0%)	28 (90.3%)	3 (9.7%)	0.082
2. Lectures having videos are more comprehensible than the ones without them*?	39 (100%)	0 (0%)	26 (83.9%)	5 (16.1%)	0.014
3. Video clarifies the facts?	39 (100%)	0 (0%)	28 (90.3%)	3 (9.7%)	0.082
4. Video helps with remembering the lecture better*?	39 (100%)	0 (0%)	24 (77.4%)	7 (22.6%)	0.002
5. Video helps with maintaining interest in the lecture?	34 (87.2%)	5 (12.8)	26 (83.9%)	5 (16.1%)	0.477
6. Video medium is a significant educational tool?	37 (94.9%)	2 (5.1%)	27 (87.1%)	4 (12.9%)	0.234
7. Knowledge gained from the video can be applied/reproduced easily?	37 (94.9%)	2 (5.1%)	28 (90.3%)	3 (9.7%)	0.391
8. Knowledge gained from the video is retained for a longer period of time compared to lectures without videos?	27 (69.2%)	12 (30.8%)	21 (67.8%)	10 (32.2%)	0.549

* Chi square test, statistically significant at $P < 0.05$.

related to analysis of technology anxiety on the basis of gender, it was also reported that females tend to have a more negative approach towards technology (internet, computers) than males.¹⁸ Therefore, we can anticipate that females avoid using new technology, have a conventional approach towards learning and are uncertain about the extensive usefulness of new technology. The authors of the present study, however, do not recommend customization of the curriculum according to gender as it will decrease the possibility of provision of equal learning opportunities for both male and female students. A step that could be useful in the reduction of technology anxiety in general is to conduct educational sessions (aimed at introducing the students to the usefulness of technology in education) for all of the students when they are inducted into the dental undergraduate program. This will not only improve their VARK abilities but will also bridge the gap present between conventional high school and professional education.

The highest disagreement percentages were seen among male and female students when they were asked whether the knowledge gained from lectures with videos is retained for a longer time than the ones without them. Both groups appeared unclear about this question. A good way to test this item is probably by showing a video to the students in a lecture, giving a lecture without video on another topic and then testing them with a quiz on both topics after some time to determine the retention of knowledge for respective lectures. However, the constraints of different psychology and memory retention capabilities would still exist between these two groups and between the individuals of the same group.

Most of the students indicated that almost a quarter of the time of the lecture should be dedicated to videos. The results of our study are almost in agreement with the study of Lim EC et al., where neuroscience students reported that a third of every lecture should contain videos.¹⁹

All of the students in this study were between 19 and 22 years of age. People born in the 1980s and 1990s have been given the term Generation Y (a generation that is increasingly familiar with technology).²⁰ Therefore, with the expansions in the field of technology and teaching future dentists from Generation Y, it becomes mandatory for dental educators to make use of the modern resources available. Students should be taught in a manner which benefits and interests them and is consistent with their technology-savvy minds. Thus, we should research what aspects of different technology tools can syndicate with learner traits and help to yield diverse types of learning styles suiting different individuals.²¹

The results of the current study report student preferences for lectures with/without videos and not the effectiveness of lectures with videos as an instructive tool. The limitations of the present study are that these results describe only the perspective of students from oral biology courses and are from only one dental college. Comparable studies of dental students from other colleges and for other subjects could provide a more distinct picture about the usefulness of the addition of videos in the lectures.

Conclusions

Based on the results of this study and considering the advantages of the addition of videos reported by third year

dental students, videos should be incorporated to assist with lectures, but the videos included in a lecture should be parallel to the desired learning outcomes of the lecture.

Conflict of interest

The authors declare no conflict of interest.

Authors' contributions

Badr A. Al-Jandan: Concept, Design, Definition of intellectual content, Literature search, Data acquisition, Data analysis, Statistical analysis, Manuscript preparation, Manuscript editing and Manuscript review. Imran Farooq: Concept, Data acquisition, Manuscript editing and Manuscript review. Soban Qadir Khan: Data analysis, Statistical analysis, Manuscript editing and Manuscript review.

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