

E-Learning Attitude in Dental Class between Oral Histology and Embryology (Comparative Study)

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ABSTRACT

E-learning had become an adopted learning method in Iraqi dental institutions of higher education through the period of quarantine. Assessment and feedback for this new experience is a necessity. The purpose of this study was to know students' perception, interaction, and satisfaction with their outcome in a comparison between oral histology and embryology as two basic preclinical sciences. One hundred eighty-five undergraduate students participated through an approved electronic questionnaire. The study showed that 72% of students consider oral histology as relevant to their dental practice compared to 24% of students who stated the relevance of embryology. Oral histology has been considered more difficult compared to embryology, 90% of students chose to use u-tube and google images from the diversity of available tools as e-resources for both subjects. There is a significant association between students' attitudes toward e-learning and their conviction in the importance of the subject in their future dental work.

Keywords: Learning, Dentistry, Computer-Assisted instruction

INTRODUCTION

Dentistry is a science that requires a medical background and an academically-based clinical practice. This requires the expansion of information resources, which can be facilitated by e-learning tools in both basic and clinical dental fields. Oral histology and embryology, are being basic sciences with direct clinical implications. Accordingly, the dental school curriculum considers them as pre-clinical dental sciences¹.

Traditional dental education had been the mainstream method in dental institutes till the end of the 20th century². With the evolution in Information Technology and Computer Sciences, e-learning started to take place as an established educational tool. It accommodates easy update for a vast information store which can be shared with a worldwide audience³.

However, the adoption of e-learning with efficient assessment still the point of controversy⁴. Some authors believed that the process of transformation to e-learning needs expert instruction⁵, potential motivation⁶, and the role of emotion was reported⁷. Also, successful interaction requires a transition in learning tools, delivery, and receiving methods. Blended learning may occupy this interval.

Nevertheless, conversion from traditional face to face learning to recent e-learning becomes a reality⁸, especially with Coronavirus outbreak. This mandates the reliance on e-learning in educational institutes to minimize the risk of virus transmission.

This study aims to compare oral histology and embryology in terms of students' interaction toward these two preclinical sciences; their difficulty, and students' satisfaction with the outcome within the provided e-learning educational methods.

MATERIALS AND METHOD

This study was approved by an Institutional Review Board of Ibn Sina University of Medical and Pharmaceutical Sciences in February/2020.

One hundred and eighty-five out of 676 students from 3 different universities in Baghdad agreed to participate in this study. The participants finished their annual courses in oral histology and embryology. They have been requested to give their feedback through an electronic questionnaire, using Google form in their native (Arabic) language. Likert scale was used in the last three questions of the form, each participant was allowed to provide a single response, Google Classroom was used to deliver the questionnaire to the participants.

Statistical Analysis: Both descriptive and analytical statistical tests were applied. Chi-Square was used to examine the correlation between categorical data. Pearson Correlation Analysis was used to test the relationship between interval variables, whereas the Spearman Correlation Test was applied to identify the relationship between ordinal variables. A *p*-value of less than 0.05 was considered the threshold for statically significant results. Data were analyzed statistically using SPSS Version 25.

RESULTS

The male to female ratio in the study sample is around 2:3, with an age mean of 21.5 years (figure-1d). Three-quarters of the participants are Baghdad residents, whereas the remaining one-quarter are from another governorate (figure-1b).

The study showed that 72% of dental students consider oral histology as a mandatory subject in an early class, while the other 24% of students are convinced that both oral histology and embryology are essential for understanding clinical dentistry. Only 4% of the participants

see there is no need for both subjects to be as basic sciences in dentistry (figure-1a).

Most of the students agreed on the need for an e-learning aid to understanding these subjects. There is, however, variable levels of agreement toward the need for e-learning tools. The results showed that 65% of all the student samples depend on this aid in oral histology while the other 35% have been used in embryology (figure-1c).

Neither gender nor city of residence was influenced students' attitude toward shifting e-learning in both embryology and oral histology.

Different electronic aids have been adopted with different percentages. YouTube videos are the most widely used e-learning tools by students. This was followed by the use of Google Images search. YouTube videos and Google Images search were adopted by 90% of students. The remaining 10% of students relied on e-books and other online educational tools (Figure-2). Chi-Square Test did not show any significant relationship between the level of difficulty in both subjects and the type of learning aid ($p > 0.05$).

Figure-1: Descriptive statistics

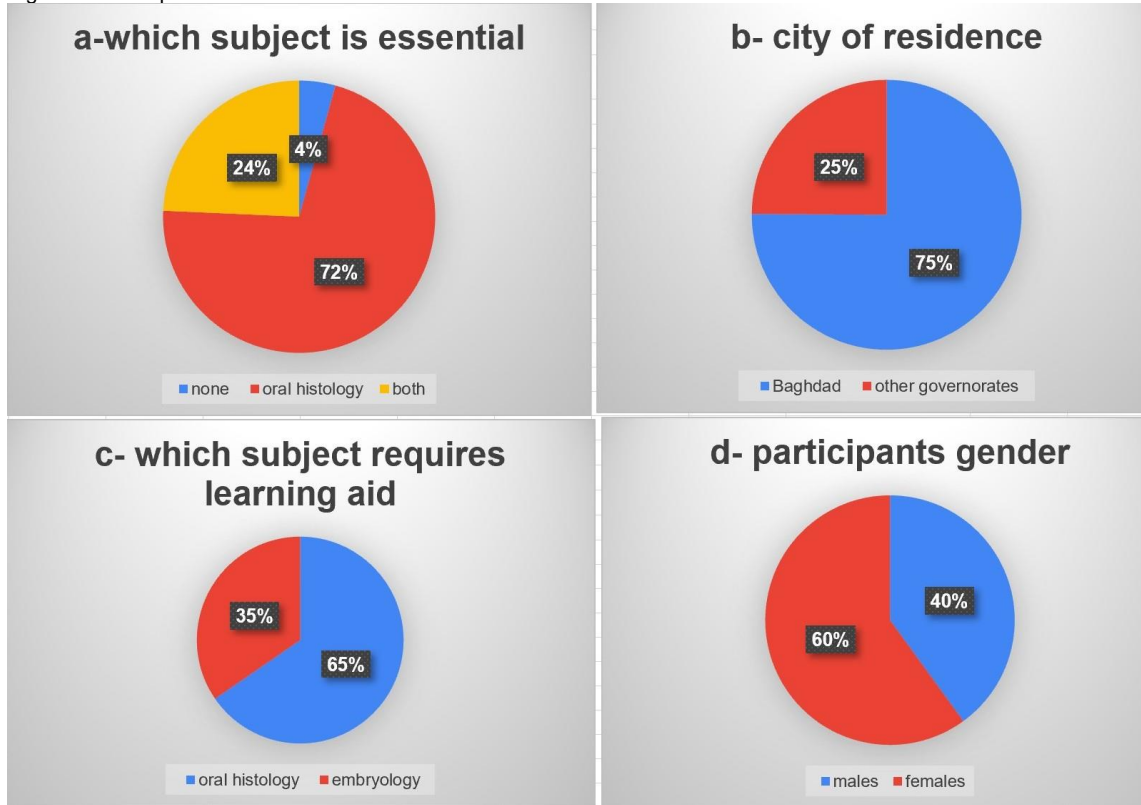


Fig. 2: E learning

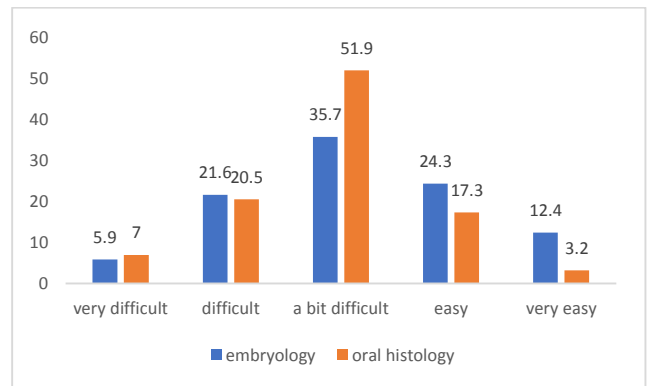
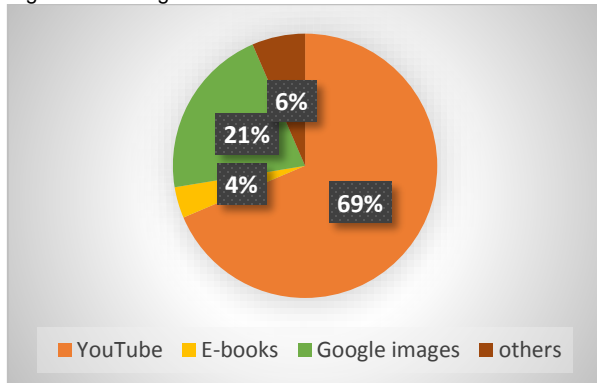
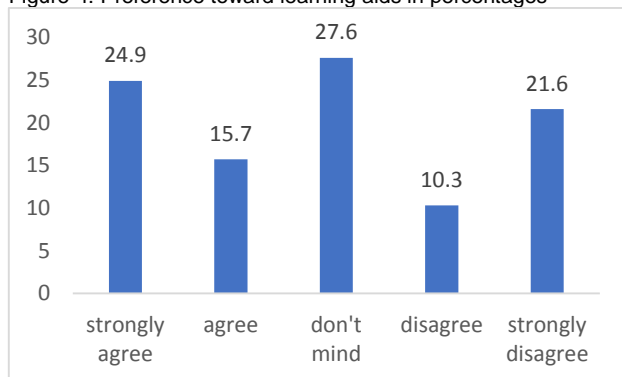


Figure-3: Percentages of difficulty for both subjects

In general, most students feel the two subjects difficult, by comparison, oral histology is more difficult, (Figure-3). There is a significant correlation ($p < 0.05$) between high school degree students and the difficulty of embryology.

As far as e-learning preference is concerned (Figure-4), there were two significant correlations ($p < 0.05$), one with the students' degree and the other with the area of residence.

Figure-4: Preference toward learning aids in percentages



Chi-Square Test showed no significant relationship ($p > 0.0$) between the difficulty of both subjects and the preference toward e-learning aid. Also, there is no significant relationship between the subject difficulty and the type of e-learning aid. Preference toward e-learning aid was, however, been found to be related to the subject's importance, from the students' point of view.

DISCUSSION

As modern dentistry is directed toward decision making; therefore, dental education must be updated to keep up with the recent changes. This needs student has a wide basic knowledge to be a health care professional. Good knowledge in basic dentistry gives the opportunity to understand structures, normal function, pathological changes and can recognize and overcome the problem⁹. Oral histology and embryology are two fundamental materials in dentistry, have been selected in this study for testing their importance and difficulties among dental students in online based-learning. These two subjects were compared in this study because both of them need demonstration aids for delivering information. Except for lab practice, no clinical training is required. Blended learning was used for both subjects as the self-directed learning tools including u-tube videos, e-book, google images, and others were introduced as learning aids.

In this study, few students consider both subjects are not essential in dentistry, while the rest of the sample realize the importance of oral histology in their future practice, which reflects our student's awareness about their scientific basis. In contrast, the results reported in previous studies by Johnson¹⁰ Ali, and Syed¹¹, when most students consider oral histology is difficult and has no relevance to their prospective career. Compared to oral histology, a minority of students regarded embryology as an essential subject in dentistry. This may be related to the information included in embryology materials are dealing with the

human body in general that makes dental students can not realize the importance of embryology at this class level. This indicates the importance of the role of the instructor in revealing its implications of studying embryology in dentistry and its clinical relevance.

Linking clinical situations together with basic information in each topic and following the teaching strategies suggested by Norman 2009¹² becomes mandatory and not in step after; to be repeated from a clinical point of view. The majority of students reported that oral histology was more difficult than embryology. This may be due to the level of information provided in studying oral histology, which could be more detailed or complicated. Detailed and complex information requires more effort from the student to understand and conceptualize. Students who find difficulty in embryology may be related to their biological background which is not aligned in this material and no enough imagine about its clinical application. In another ward, the educational background which helps students in oral histology can't do its impact in embryology, which is similar to Canaday and Lancaster's findings in (1985)¹³. Most students in this study prefer e-learning aids, and a significant correlation was noticed between the preference of using e-resources and the importance of the material in their point of view. You-Tube is frequently adopted by our students in electronic-based learning. This reflects the student's conviction that electronic sites will provide them with rich information, images, videos, and what they need to succeed in their performance and to give the essential subject of its merit. The matter which cannot be applied in traditional learning, because some impediments like *lecture or session duration limit the amount of material delivered, *compliance with a specific time for attendance which may not be fit all students, in addition to *the restriction with the approved curriculum.

It worth noting that high-grade students prefer e-learning in receiving the course, which reflects the ability of electronic resources to saturate their demands of copious information in a short time. Furthermore, time-saving for those students is very important. Similar studies by Holaday et al¹⁴, Ali and Syed¹¹ showed their students prefer studying using electronic resources for histology. Other studies by Gadbury-Amyot et al¹⁵ and Ariana et al⁹ revealed a positive perception and improvement in students' outcomes by using e-learning over those who follow traditional learning. Johnson et al¹⁰ was reported an opposite student interest in using e-resources in oral histology course, this agreement with Selvig whose students present in lectures and practical sessions under teacher guide performed better than those who present online¹⁶.

In general, only about one-third of the original number of students interacted with the electronic questionnaire. Students' reluctance is a point that arises a question around the possible barriers of online learning. However, further study is recommended to determine the obstacles that inhibit effective students' online education

CONCLUSION

In this study our student's concepts that oral histology is more difficult than embryology and more essential for their

future career. However, this influenced neither the need nor the type of e-learning aid. The preference toward e-learning aid was found to be related to the importance of the subject from the students' perspectives. YouTube seems to play a major role as a learning tool compared to other available information sources on the web.

Acknowledgments: The authors would like to acknowledge all participants who poll the questionnaire and are grateful to Google for providing the Google form software.

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