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Research Article

TOOTH CARVING SESSIONS AND PERCEPTION OF DENTAL STUDENTS' REGARDING UNDERSTANDING OF TOOTH MORPHOLOGY

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Abstract:

The study was aimed at study the perception of dental students at Baqai dental college regarding tooth carving sessions and how it is helpful in developing their understanding and skills of the subject of tooth morphology.

Material and Method: *This cross-sectional study was conducted at Baqai Dental College. The self-administered survey questionnaire was provided to the students of 2nd year to final year and House Officers who volunteered for the study. The purpose of the study was explained to them and consent was taken. The sample size was calculated using Openepi with a confidence interval of 95%. 200 subjects filled in the questionnaire. The first year BDS students were not included in the study as the subject of Dental Anatomy & Tooth Morphology is taught in 2nd year and they have no exposure to the subject. The data was entered and analyzed using SPSS-20.*

Results: *Out of 200 participants, 3rd year students were more in number among the participants and lesser number of participants were from 2nd year BDS. More than 80% of the participants strongly agreed that carving sessions improved their understanding of tooth morphology. Among them majority was of the house officers (94%), who agreed to it. More than 70% reported these exercises to be helpful in developing knowledge of 3D structure of tooth and manual dexterity. 56.5% of participants stated the feedback provided was beneficial. The majority of house officers acknowledge the effectiveness of feedback provided for the carving session, whereas majority of the responders from 2nd year to final year have not found it as much useful. About 2/3rd of the participants (66.7%) acknowledged the carving exercises to be useful in all (most of them from 2nd year BDS-78.3%).*

Conclusion: *The carving sessions do assist to improve knowledge and psychomotor skills for the subject of tooth Morphology. The results may be used to support an idea of including tooth carving exercises as a formal component of skill sessions of the subject of Dental anatomy and Tooth Morphology.*

Key Words: *Tooth carving, tooth morphology, dental anatomy, wax sculpture*

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INTRODUCTION:

Tooth morphology is the study of structural and functional components of primary and permanent dentition along with the mechanism of Occlusion. It serves as a foundation for all the clinical disciplines of Dentistry specially those involving restorative procedures [1]. In most dental schools throughout the world, teaching dental anatomy is a twofold process (theory and practical). Students acquire theoretical knowledge first by studying textbooks and articles, attending class lectures, observing teeth models and analyzing drawings. In the next phase of learning (practical) students carve various materials (wax, soap or plaster) to reproduce a given reference model of teeth in various sizes to reinforce the theoretical component and enhancing manual skills [2]. Hence, the course of tooth morphology includes both cognitive and psychomotor components of learning. The knowledge of tooth morphology serves as a guide to appreciate the normal anatomical and functional features of dentition, whereas the psychomotor learning is achieved by analysis of 3D models of tooth and replicating the normal morphology of tooth on a wax/soap block manually [3]. Dental carving plays a major role in training dental students as it develops their manual dexterity and psychomotor skills [4].

A variety of modes of information transfer are practiced to teach the subject of dental anatomy and tooth morphology. In majority of the dental institutes around the world, traditional ways of teaching are employed e.g; lectures and discussions to deliver the theoretical component; whereas the practical component comprises of drawing two-dimensional structure of teeth, identification of anatomical features on study models or real specimens, and few practice carving tooth structure [5]. Dental carving method was first stated by Wheeler (1940) as a method of teaching which was later upgraded by other researchers. It comprises of the replication of anatomical landmarks, geometrical outline and structure of tooth on wax blocks. This method was considered useful in developing understanding of the subject [6, 7].

To the best of our knowledge, only in couple of dental colleges in Pakistan, tooth carving sessions are included as a Practical component of curriculum of

Dental anatomy and tooth morphology subject and no study is conducted locally regarding this teaching modality. The study was aimed at study the perception of dental students at Baqai dental college regarding tooth carving sessions and how it is helpful in developing their understanding and skills of the subject of tooth morphology. This will help to analyze and review the importance of tooth carving exercises as a practical component of tooth morphology in curriculum.

MATERIAL AND METHOD:

This cross-sectional study was conducted at Baqai Dental College. The self-administered survey questionnaire was provided to the students of 2nd year to final year and House Officers who volunteered for the study. The purpose of the study was explained to them and consent was taken. The sample size was calculated using Openepi with a confidence interval of 95%. 200 subjects filled in the questionnaire. The first year BDS students were not included in the study as the subject of Dental Anatomy & Tooth Morphology is taught in 2nd year and they have no exposure to the subject. The data was entered and analyzed using SPSS-20.

RESULTS:

A total of 200 participants filled in the survey form. The Educational level, of the survey respondents is presented in Fig.1. Third year students were more in number among the participants and lesser number of participants were from 2nd year BDS. The statistical results of responses given are included in Table 1.

More than 80% of the participants strongly agreed that carving sessions improved their understanding of tooth morphology. Among them majority was of the house officers (94%), who agreed to it. More than 70% reported these exercises to be helpful in developing knowledge of 3D structure of tooth and manual dexterity. 56.5% of participants stated the feedback provided was beneficial. The majority of house officers acknowledge the effectiveness of feedback provided for the carving session, whereas majority of the responders from 2nd year to final year have not found it as much useful. About 2/3rd of the participants (66.7%) acknowledged the carving exercises to be useful in all (most of them from 2nd year BDS-78.3%).

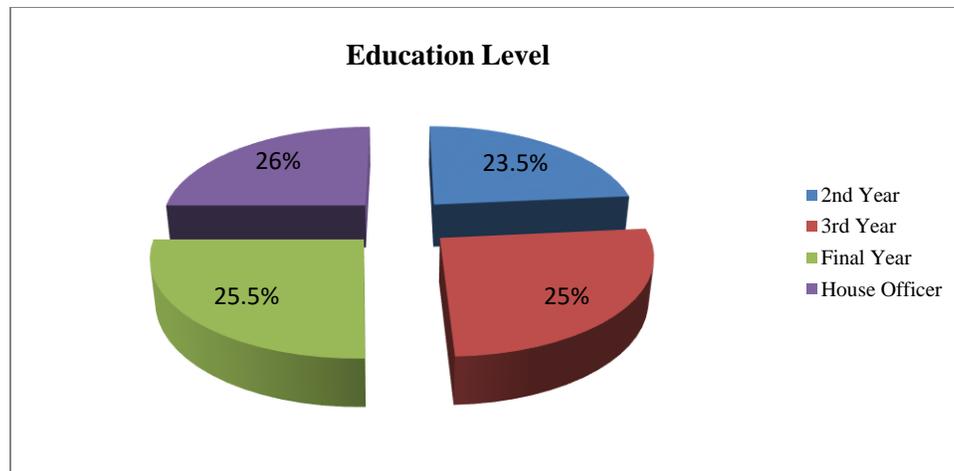


Fig1. Distribution of Educational level of Participants

Table 1: Responses of the questions in percentages where n=200

Q. No.	QUESTION	RESPONSE(%age)		
		Agree	Neutral	Disagree
1.	The carving exercise helped me better understand tooth morphology	82.5	13	4.5
2.	The carving sessions helped me understand the anatomy of teeth in three dimensions	72.5	24	3.5
3.	The carving sessions helped me developed my manual dexterity	71	24	5
4.	The carving sessions helped me familiarize with some of the lab instruments	73	23.5	3.5
5.	The carving sessions helped me understand the proper grip of instruments	76.5	21	2.5
6.	The material used (soap blocks) was easy to handle	69	23	8
7.	The laboratory space provided was ideal for performing the tasks	62.5	29.5	8
8.	I think an online demonstration of the process of carving a tooth would have been helpful	63.5	28	8.5
9.	The supervising staff members were helpful in the carving sessions	64.5	28	7.5
10.	The marking criteria for tooth models are realistic	63	30	7
11.	The comments that markers provided were useful	56.5	34	9.5
12.	I found the carving sessions waste of time	38	33	29
13.	I do not think the carving sessions added anything to my knowledge of tooth morphology	45	31.5	23.5
14.	All in all I found the carving exercises very useful	66.7	26.3	7.1

DISCUSSION:

The knowledge of tooth morphology includes understanding of structural and functional components of the tooth along with their position and arrangement in Oral cavity and role in Occlusion. All of these are must to know content about dentition to a dentist for daily clinical practice. Woelfel (2012) labeled learning the concepts of dental anatomy as 'foreign' language that students will have to practice throughout their professional career. As dentistry is considered combination of arts and science, for a competent dentist, possessing knowledge of dental anatomy is insufficient without the grasp of practical component of it [9]. Therefore, tooth carving sessions provide significant resource for the practicing and mastering the skill of replicating anatomical and morphological structures of tooth. It also improves manual dexterity and retention of knowledge among students. Rafai et al. (2016) highlighted the establishment of association of the theoretical knowledge with the clinical implications earlier in the curriculum helps students to recognize the practical significance of the course and motivates them for learning [10]. In order to provide more real life experience of clinical skills. A variety of methodologies are used to teach the subject of Dental anatomy and tooth morphology but none can be employed as an alternative to the practice of dental sculpture [11, 12]. Restoration of normal functional and structural tissues of oral cavity provides improved health and quality of life to the patients. It also assists to carry out normal functions like mastication and maintaining oral hygiene and preservation of the periodontium status and long lasting clinical prognosis of restorative procedures done [13, 14].

In current study, more than 2/3rd of the participants agreed that the carving session helped to improved their knowledge and understanding of Tooth morphology. Similar results were reported in study by Cruvinel and Morais and Yara Oweiset et al, involving students [4, 15]. Meghanand T. Nayak et al in their study stated the similar responses by faculty and practicing dentists [2]. On the contrary, MORETTO et al. (2014) did not witness any correlation between the theoretical knowledge and the practical performance of the students in dental sculpture [6].

In our study, 71% of the respondents affirmed that the carving sessions enhanced their manual skills. These results are in agreement with the study of Patil et al. (2015) in which students (undergraduate, trainees and postgraduate) agreed that the knowledge and hands on sessions helped them to create good

dental sculptures [16]. Rafai et al (2016) in their study demonstrated that the learning outcomes of skill training were again increased significantly when training was combined with the electronic module, making it the ideal method to achieve learning objectives [10]. Polyzois *et al.* established in their study that preclinical skill training sessions would improve manual and clinical skills of students [17].

66% of respondents in our study have assented that carving sessions were useful in all. These results are in congruent to the results of Jordanian and Scottish study where around 77.76 % and 59.09% of students stated the carving sessions to be useful overall.

CONCLUSION:

Our study has a limitation of being uni-centered and cross sectional, so the results cannot be generalized. Within the limitations of the study, it can be determined that carving sessions do assist to improve knowledge and psychomotor skills for the subject of tooth Morphology. A longitudinal observational study could be conducted to study its effect in clinical practices. The results may be used to support an idea of including tooth carving exercises as a formal component of skill sessions of the subject of Dental anatomy and Tooth Morphology.

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