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## Knowledge, Attitude and Practice of Tooth Morphology among Dental Students

Research Article

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#### Abstract

Aim: The aim of the study was to analyse the knowledge, attitude and practice of tooth morphology among dental students. Introduction: Tooth morphology or dental anatomy is defined as the subject which deals with the external and internal structure of tooth development. Dental anatomy is taught as a basic dental subject in dental schools in India. The knowledge of dental anatomy has immense use in clinical practice in dentistry. However, few people feel that dental anatomy has no use and has to be removed from the curriculum.

**Materials and Methods:** The present study was a cross sectional study conducted in 2020, where a questionnaire consisting of 10 questions were distributed to 200 dental students of different years of study. Google forms are used to collect the response. Survey was carried out using pre-existing, self administered, structural and online based questions. Data was analysed using a statistical package for the social sciences SPSS software.

**Results:** A total of 200 responses from the dental students were received. In total 33.3% of participants agreed that understanding tooth morphology helps in identification of primary and permanent teeth. 30.8% of participants agreed that knowing tooth morphology helped me to do my clinical work with confidence.

**Conclusion:** The present study revealed that the dental students have moderate knowledge of tooth morphology and moderately agree on its importance in professional dental practice.

Keywords: Dental Anatomy; Tooth Morphology; Knowledge, Awareness.

# Introduction

Dental anatomy is an important component of dental curriculum in the programs of dentistry in India [1]. Tooth morphology or dental anatomy is defined as the subject which deals with the external and internal structure, morphology, function, eruption and shedding of all the teeth in the mouth [2]. Tooth morphology in a subject which explains about both the primary and permanent teeth [3]. The knowledge of tooth morphology, forms the fundamental basics for all the fields of dentistry [4]. Tooth impart many important functions in life such as for mastication purpose, phonation, speech and very importantly gives aesthetic value and feature to our face [5]. Knowledge of tooth morphology also plays an important role in restorative treatments, to achieve functional

occlusal relationship, aesthetics, phonation and forensic investigation [6]. Also knowledge of dental anatomy/tooth morphology, helps in the prevention of dental diseases, endodontic and orthodontic therapy, forensic investigation, anthropological studies, fabrication of fixed and removable prosthesis and for procedures such as placement of rubber dams and matrix bands [7]. The practical tooth morphology classes are to improve, the manual skills which have paved the way to meet the clinical challenges [8].

However, there are a lot of different opinions whether to retain or ban the dental anatomy subject for future graduates as many of current graduates feel that tooth carving is an old age technique which has no use in the current or future graduates. Also, they feel learning tooth morphology only makes the student a great

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technician.. Previously our team had conducted numerous original studies [9-15] and surveys [16-23] over the past 5 years. Now we are expanding our focus on epidemiology surveys. The idea of this survey stemmed from the current interest in our community. The present study was aimed to analyse knowledge, attitude and practice of tooth morphology among dental students.

#### Materials and Methods

A cross sectional study was designed in 2020 and performed among the dental students of our Institution. This study was approved by the institutional Review board. The study sample size was 200 dental students. The sampling techniques used was convenience sampling. To maintain liable privacy of act, we ensured to get information on their names or contact information. This study was conducted among three groups of study population namely BDS students, Interns and MDS students. A pre-existing, self administered, structural questionnaire was used as the study tool. The questions were developed from pre existing literature. The data collection is done in google forms. The responses were marked on a five-point Likert scale with options of strongly agree, agree, neutral, disagree and strongly disagree. The statistical analysis was performed using SPSS software. The statistical tests used were descriptive statistics and chi square tests. p value of <0.05 was taken to be statistically significant. Confidence level was set at 95%.

### Results

A total of 200 completely filled questionnaires were received. From the 200 study population 73.6% are BDS students, 15.4% are intern and 10.9% are MDS. All the questions and the corresponding frequency of responses are shown is the Table 1.

In the present study, 15.9% have responded - Strongly Agree and 33.3% responded - Agree on Understanding tooth morphology helps in correct identification of primary and permanent teeth. 12.4% have responded - Strongly Agree and 32.8% responded - Agree on Confident in estimating the chronological age of a patient by visualising the teeth.

For the question Can identify all the landmarks on the teeth confidently because of its reinforcement through carving classes. 16% have responded - Strongly Agree and 33.8% responded - Agree and for the question Able to diagnose teeth anomalies because of my sound knowledge of normal tooth morphology. 22.3% have responded - Strongly Agree and 23.3% responded - Agree.

For the question Knowing tooth morphology helps me to do my clinical work with confidence. 13.9% have responded - Strongly Agree and 30.8% responded - Agree and for the question Tooth carving classes have tutored in registering and retaining the theory knowledge of tooth morphology efficiently. 15.4% have responded - Strongly Agree and 29.8% responded - Agree.

For the question Can design and perform cavity preparation for a tooth efficiently because of sound knowledge in measurements and morphology. 20% have responded - Strongly Agree and 29.3% responded - Agree and for the question Subconscious knowledge of tooth morphology has transformed into a good teeth sculptor. 14.4% have responded - Strongly Agree and 29.8% responded - Agree.

For the question Tooth morphology carving helps in carving or retaining the lost tooth structure in clinics. 13% have responded - Strongly Agree and 23.3% responded - Agree and for the

Table 1. Table showing frequency of responses.

Questions	Strongly Agree %	Agree %	Neutral %	Disagree %	Strongly Disagree %
Understanding tooth morphology helps in correct identification of primary and permanent teeth.	15.90%	33.30%	28.30%	19.40%	2.90%
Confident in estimating the chronological age of a patient by visualizing the teeth.	12.40%	22.80%	26.80%	27.80%	9.90%
Can identify all the landmarks on the teeth confidently because of its reinforcement through carving classes.	15.90%	33.80%	22.80%	19.40%	7.90%
Able to diagnose teeth anomalies because of my sound knowledge of normal tooth morphology.	22.30%	23.30%	19.40%	24.30%	10.40%
Knowing tooth morphology helps me to do my clinical work with confidence.	13.90%	30.80%	23.80%	22.80%	8.40%
Tooth carving classes have tutored in registering and retaining the theory knowledge of tooth morphology efficiently.	15.40%	29.80%	27.80%	20.40%	6.40%
Can design and perform cavity preparation for a tooth efficiently because of sound knowledge in measurements and morphology.	19.90%	29.30%	21.30%	19.40%	9.90%
Subconscious knowledge of tooth morphology has transformed into a good teeth sculptor.	14.40%	29.80%	20.90%	23.80%	10.95
Tooth morphology carving helps in carving or retaining the lost tooth structure in clinics.	12.90%	23.30%	29.80%	21.80%	11.40%
Confident to apply tooth morphology knowledge as an investigation tool in forensic sciences.	18.90%	25.30%	27.30%	22.30%	5.90%

question Confident to apply tooth morphology knowledge as an investigation tool in forensic sciences. 18.9% have responded - Strongly Agree and 25.3% responded - Agree.

#### Discussion

In our study, participants were questioned whether understanding tooth morphology helps in correct identification of primary and permanent teeth. 15.9% have responded - Strongly Agree and 33.3% of the study population responded - Agree. On comparing three different study groups, it was found that out of 200 study participants, 23 BDS students have responded- Strongly Agree and 47 BDS students answered Agree, which was the highest response for this question. A chi square test comparison between different years of study showed (p)=0.330 which indicates statistically insignificant [Fig:1]. This finding is similar to a study done by Patil s et al 2019 [24], in which BDS students gave a more positive response of 43.2%. This shows that much of the dental students don't feel that Understanding tooth morphology helps in correct identification of primary and permanent teeth, probably because of less number of practical training classes allotted to them.

For the question Confident in estimating the chronological age of a patient by visualising the teeth.12.4% have responded - Strongly Agree and 22.8% of the study population responded - Agree. On comparing three different study groups, it was found that out of 200 study participants, 16 BDS students have responded-Strongly Agree and 35 BDS students answered Agree, which was the highest response for this question. A chi square test comparison between different years of study showed (p)=0.046 which indicates statistically significant [Fig:2]. This finding is similar to a study done by Patil S et al 2019 [24]. in which BDS students gave a more positive response of 54.05%. This shows that many of the dental students don't feel that Confident in estimating the chronological age of a patient by visualising the teeth, probably because of less number of practical training classes allotted to them.

For the question Can identify all the landmarks on the teeth confidently because of its reinforcement through carving classes. 16% have responded - Strongly Agree and 34% of the study population responded - Agree. On comparing three different study groups, it was found that out of 200 study participants, 23 BDS students have responded- Strongly Agree and 51 BDS students answered

Agree, which was the highest response for this question. A chi square test comparison between different years of study showed (p)=0.879 which indicates statistically insignificant [Fig:3]. This finding is similar to a study done by Patil S et al., 2019 [24], in which BDS students gave a more positive response of 50.4%. This shows that many of the dental students don't feel that Can identify all the landmarks on the teeth confidently. It indicates more reinforcement needed during carving classes.

For the question Able to diagnose teeth anomalies because of my sound knowledge of normal tooth morphology. 22.3% have responded - Strongly Agree and 23.3% of the study population responded - Agree. On comparing three different study groups, it was found that out of 200 study participants, 35 BDS students have responded- Strongly Agree and 36 BDS students answered Agree, which was the highest response for this question. A chi square test comparison between different years of study showed (p)=0.360 which indicates statistically insignificant. This finding is similar to a study done by Patil S et al 2019, [24] in which BDS students gave a more positive response of 50.4%. This shows that many of the dental students don't feel that Able can diagnose tooth anomalies, this emphasises the need for more importance of dental anatomy to the dentals students.

For the question Knowing tooth morphology helps me to do my clinical work with confidence.

13.9% have responded - Strongly Agree and 30.4% of the study population responded - Agree. On comparing three different study groups, it was found that out of 200 study participants, 19 BDS students have responded- Strongly Agree and 51 BDS students answered Agree, which was the highest response for this question. A chi square test comparison between different years of study showed (p)=0.245 which indicates statistically insignificant[Fig:4]. This finding is similar to a study done by Patil S et al 2019, [24] in which BDS students gave a more positive response of 63.06%. This shows that many of the dental students don't feel that Knowing tooth morphology helps me to do my clinical work with confidence, probably because of the less number of practical training classes allotted to them.

For the question Tooth carving classes have tutored in registering and retaining the theory knowledge of tooth morphology effi-

Figure 1. Bar graph showing chi square analysis of comparison of students of different years of study on Understanding tooth morphology in correct identification of primary and permanent teeth. X-axis showing year of study and Y-axis showing number of students. Blue denotes strongly agree, Red denotes agree, Green denotes neutral, Orange denotes disagree, Yellow denotes strongly disagree. Majority of BDS students (47 out of 148) have responded Agree on Understanding tooth morphology in correct identification of primary and permanent teeth, but comparison was not statistically significant. Chi square test p=0.330 indicating statistically not significant.

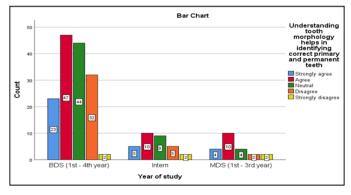


Figure 2. Bar graph showing chi square analysis of comparison of students of different years of study on Confident in estimating the chronological age of a patient by visualising the teeth. X-axis showing year of study and Y-axis showing number of students. Blue denotes strongly agree, Red denotes agree, Green denotes neutral, Orange denotes disagree, Yellow denotes strongly disagree. Majority of the BDS students (46 out of 148)have responded Neutral on Confidence in estimating the chronological age of a patient by visualising the teeth, and comparison was statistically significant. Chi square test p=0.046 indicating statistically significant morphology in correct identification of primary and permanent teeth, but comparison was not statistically significant. Chi square test p=0.330 indicating statistically not significant.

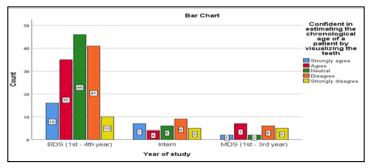


Figure 3. Bar graph showing chi square analysis of comparison of students of different years of study on Can identify all the landmarks on the teeth confidently because of its reinforcement through carving classes. X-axis showing year of study and Y-axis showing number of students. Blue denotes strongly agree, Red denotes agree, Green denotes neutral, Orange denotes disagree, Yellow denotes strongly disagree. Majority of BDS students (51 out of 148) have responded and agree on Can identify all the landmarks on the teeth confidently because of its reinforcement through carving classes, but comparison was not statistically significant. Chi square test p=0.879 indicating statistically non significant.

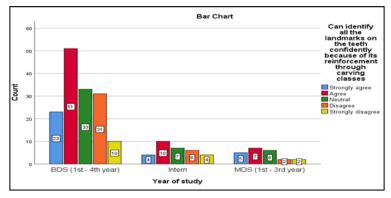
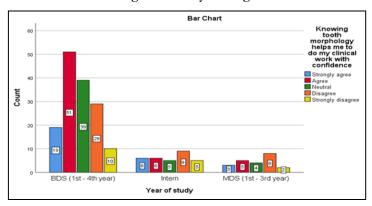


Figure 4. Bar graph showing chi square analysis of comparison of students of different years of study on Knowing tooth morphology helps me to do my clinical work with confidence. X-axis showing year of study and Y-axis showing number of students. Blue denotes strongly agree, Red denotes agree, Green denotes neutral, Orange denotes disagree, Yellow denotes strongly disagree. Majority of BDS students (51 out of 148) have responded and Agree on Knowing tooth morphology helps me to do my clinical work with confidence, but comparison was not statistically significant. Chi square test p=0.245 indicating statistically non significant.



ciently. 15.4% have responded - Strongly Agree and 29.8% of the study population responded - Agree. On comparing three different study groups, it was found that out of 200 study participants, 22 BDS students have responded- Strongly Agree and 48 BDS students answered Agree, which was the highest response for this question. A chi square test comparison between different years of

study showed (p)=0.342 which indicates statistically insignificant. This finding is similar to a study done by Patil S et al 2019, [24] in which BDS students gave a more positive response of 48.6%. This shows that many of the dental students don't feel that Tooth carving classes have tutored in registering and retaining the theory knowledge of tooth morphology efficiently, probably because of

Figure 5. Bar graph showing chi square analysis of comparison of students of different years of study on Can design and perform cavity preparation for a tooth efficiently because of sound knowledge in measurements and morphology. X-axis showing year of study and Y-axis showing number of students. Blue denotes strongly agree, Red denotes agree, Green denotes neutral, Orange denotes disagree, Yellow denotes strongly disagree. Majority of BDS students (45 out of 148) have responded to a Agree on Can design and perform cavity preparation for a tooth efficiently because of sound knowledge in measurements and morphology, but comparison was not statistically significant. Chi square test p=0.937 indicating statistically non significant.

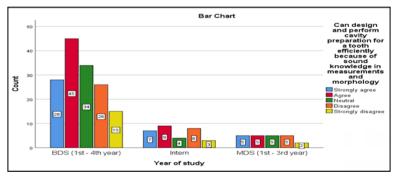


Figure 6. Bar graph showing chi square analysis of comparison of students of different years of study on Tooth morphology carving helps in carving or retaining the lost tooth structure in clinics. X-axis showing year of study and Y-axis showing number of students. Blue denotes strongly agree, Red denotes agree, Green denotes neutral, Orange denotes disagree, Yellow denotes strongly disagree. Majority of BDS students (48 out of 148) have responded neutral on Tooth morphology carving helps in carving or retaining the lost tooth structure in clinics, but comparison was not statistically significant. Chi square test p=0.365 indicating statistically non significant.

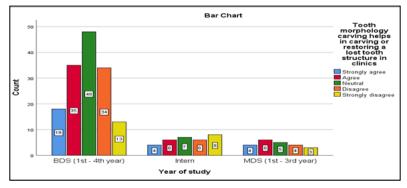
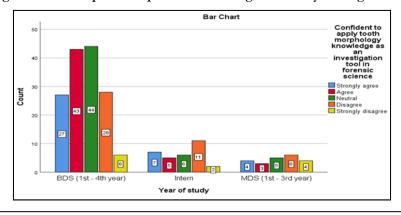


Figure 7. Bar graph showing chi square analysis of comparison of students of different years of study on Confident to apply tooth morphology knowledge as an investigation tool in forensic sciences. X-axis showing year of study and Y-axis showing number of students. Blue denotes strongly agree, Red denotes agree, Green denotes neutral, Orange denotes disagree, Yellow denotes strongly disagree. Majority of BDS students (44 out of 148) have responded neutral on Confidence to apply tooth morphology knowledge as an investigation tool in forensic sciences, but comparison was not statistically significant. Chi square test p=0.074 indicating statistically non significant.



the less number of practical training classes allotted to them [25-30].

For the question Can design and perform cavity preparation for a tooth efficiently because of sound knowledge in measurements and morphology. 20% have responded-Strongly Agree and 29.1% of the study population responded - Agree. On comparing three different study groups, it was found that out of 200 study participants, 28 BDS students have responded- Strongly Agree and 45 BDS students answered Agree, which was the highest response for this question. A chi square test comparison between different years of study showed (p)=0.937 which indicates statistically

insignificant [Fig:5]. This finding is similar to a study done by Patil S et al 2019, [24] in which BDS students gave a more positive response of 64.8%. This shows that many of the dental students in our study don't feel that Can design and perform cavity preparation for a tooth efficiently because of sound knowledge in measurements and morphology, probably because of the less number of practical training classes allotted to them.

For the question Subconscious knowledge of tooth morphology has transformed into a good teeth sculptor. 14.4% have responded - Strongly Agree and 29.8% of the study population responded - Agree. On comparing three different study groups, it was found that out of 200 study participants, 23 BDS students have responded-Strongly Agree and 46 BDS students answered Agree, which was the highest response for this question. A chi square test comparison between different years of study showed (p)=0.258 which indicates statistically insignificant. This finding is similar to a study done by Patil S et al., 2019 [24], in which BDS students gave a more positive response of 44.1%. This shows that many of the dental students don't feel that Subconscious knowledge of tooth morphology has transformed into a good teeth sculptor.

For the question Tooth morphology carving helps in carving or retaining the lost tooth structure in clinics. 13% have responded - Strongly Agree and 23.3% of the study population responded - Agree. On comparing three different study groups, it was found that out of 200 study participants, 18 BDS students have responded- Strongly Agree and 35 BDS students answered Agree, which was the highest response for this question. A chi square test comparison between different years of study showed (p)=0.365 which indicates statistically insignificant [Fig:6]. This finding is similar to a study done by Patil S et al 2019, [24] in which BDS students gave a more positive response of 43.2%. This shows that many of the dental students don't feel that Tooth morphology carving helps in carving or retaining the lost tooth structure in clinics.

For the question Confident to apply tooth morphology knowledge as an investigation tool in forensic sciences. 18.9% have responded - Strongly Agree and 25.3% of the study population responded - Agree. On comparing three different study groups, it was found that out of 200 study participants, 27 BDS students have responded- Strongly Agree and 43 BDS students answered Agree, which was the highest response for this question. A chi square test comparison between different years of study showed (p)=0.074 which indicates statistically insignificant [Fig:7]. This finding is similar to a study done by Patil S et al 2019, [24] in which BDS students gave a more positive response of 38.7%. This shows that many of the dental students don't feel that Confident to apply tooth morphology knowledge as an investigation tool in forensic sciences, probably because of the less number of practical training classes allotted to them.

The limitation of the study is the lesser sample size and the study involving the homogenous populations. This study was limited to one geographical location and the results cannot be generalised to a larger population.

#### Conclusion

In the present study, knowledge, attitude and practice of tooth morphology among dental students was found to be moderate. Among BDS students, interns and MDS students, BDS students tend to agree more on the importance of tooth morphology sessions in the curriculum. Further studies with more population needed to assess the knowledge and importance of tooth morphology. Increased numbers of tooth morphology practical classes are the need of the hour.

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#### **Author Contribution**

Mohamed Noufal Z carried out the literature search, data collection, data analysis and manuscript writing. K.R.Don and Archana Santhanam conceived the study, participated in its design and coordinated and provided guidance to draft the manuscript. All the authors had equally contributed in developing the manuscript.

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