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Research

Knowledge, Attitude, Perception On Implementation Of Digital Dentistry In Pre-Clinical Curriculum

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	Abstract
Published on: 04 Apr 2025	<p>This study aims to investigate the knowledge, attitude, and perception of dental students regarding the implementation of digital dentistry in the pre-clinical curriculum. As digital technologies continue to transform the field of dentistry, understanding how students perceive these changes is essential for effective curriculum development. The study will assess the current level of knowledge among students about digital tools, their attitudes towards integrating these technologies into their education, and their perceptions of the impact of digital dentistry on their future practice.</p> <p>Aim: To evaluate the knowledge, attitude, and perception of dental students towards the integration of digital dentistry in the pre-clinical curriculum.</p> <p>Objectives : 1. To assess the level of knowledge of dental students about various digital dentistry technologies and their applications. 2. To explore the perceptions of dental students regarding the effectiveness and relevance of digital dentistry in their future careers.</p> <p>Method: A cross-sectional survey was conducted among 200 dental students, comprising 65 males (17.5%) and 135 females (67.5%), including 74 third-year BDS students, 66 fourth-year BDS students and 60 interns. The survey included 14 questions exploring awareness, perceptions, On digital dentistry for pre-clinical Curriculum. Responses were analyzed based on gender and year of study using chi-square tests to identify statistically significant differences.</p>
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<p>2025 All rights reserved.</p>  <p>Creative Commons Attribution 4.0 International License.</p>	<p>Keywords: Dentistry, Dental students, Digital dentistry, CAD/CAM, dental curriculum.</p>

INTRODUCTION

The field of dentistry is undergoing a significant transformation with the advent of digital technologies, which are revolutionizing traditional practices and enhancing patient care. Digital dentistry encompasses a range of tools and techniques, including intraoral scanners, CAD/CAM systems, digital radiography, and 3D printing, all of which streamline workflows, improve accuracy, and elevate the overall quality of dental services. As dental education adapts to these advancements, it is essential to integrate digital dentistry into the pre-clinical curriculum to prepare future practitioners for the evolving landscape of dental practice.

Understanding dental students' knowledge, attitudes, and perceptions regarding digital dentistry is crucial for effective curriculum development. Knowledge refers to students' familiarity with digital technologies and their applications in clinical settings. Attitude encompasses students' feelings and beliefs about the relevance and utility of these tools in their education and future careers. Perception involves students' views on the effectiveness of digital dentistry compared to traditional methods. By exploring these dimensions, educators can identify gaps in knowledge, address misconceptions, and foster a positive learning environment that embraces technological advancements.

This study aims to provide insights into dental students' readiness to adopt digital dentistry practices and the potential impact on their clinical competencies. By assessing the current state of knowledge, attitudes, and perceptions, the findings will inform curriculum enhancements and support the integration of digital technologies in dental education, ultimately leading to improved patient care and outcomes in the field of dentistry.

As digital dentistry continues to advance, it is imperative to consider the implications for patient care and the overall dental practice landscape. One significant benefit of digital technologies is the ability to create more accurate and efficient treatment plans. For instance, intraoral scanners and digital imaging allow for precise mapping of a patient's dental structure, minimizing the need for traditional impressions that can be uncomfortable for patients. This not only enhances patient comfort but also leads to better-fitting restorations and improved clinical outcomes.

Moreover, the use of CAD/CAM (Computer-Aided Design and Computer-Aided Manufacturing) systems has revolutionized the way dental restorations are designed and produced. With these systems, dental professionals can create crowns, bridges, and other prosthetics in a matter of hours instead of days, significantly reducing turnaround times and improving patient satisfaction. As students learn to utilize these technologies, they gain valuable skills that will be essential in their future practices.

Additionally, the integration of digital tools in dental education fosters a culture of innovation and adaptability among students. As they become proficient in using digital technologies, they are more likely to embrace continuous learning and stay updated with future advancements in the field. This adaptability is crucial in a profession that is constantly evolving, ensuring that dental graduates remain competitive and capable of providing top-notch care.

In conclusion, understanding dental students' knowledge, attitudes, and perceptions of digital dentistry is vital for shaping an educational framework that prepares them for the future. By addressing these aspects, dental educators can create a curriculum that not only incorporates the latest technologies but also instills confidence and competence in students, ultimately enhancing the quality of dental care provided to patients.

METHODOLOGY

Study design and area:- A cross sectional study was carried out at tertiary care teaching hospital khammam

Study population: The health care students including those of IV year and Interns who responded to the offline paper print questionnaire survey.

Study Instrument: A self administered questionnaire was designed based on knowledge attitude and awareness on the advanced technology had total 14 questions. Each participant has to fill their demographic data like Name, age, and year of study. Participant has to select one option from the answers provided against questions the questions were based on knowledge attitude and awareness among dental students.

Pilot study: A pilot study was conducted on a group of students to assess the validity and reliability of study

Sampling method: The sampling method used is convenience method

Inclusion criteria: The students who were interested in study and who are willing to participate

Exclusion criteria: students who are not willing to participate are excluded

Organizing the study: The study was designed in a paper based version of the self administered questionnaire of 14 questions focusing on knowledge, awareness.

Includes the sections of demographic data: Name, Age, Sex and Year of study demographic information and asked to answer all questions by selecting one option from the provided answers.

Statistical analysis

Data from the filled questionnaire was conducted in a tabular form in an excel worksheet and evaluated for analysis.the analysis was performed by SSPS version 29

RESULTS

A total of 200 students took part in this with female (67.5%) and male of (17.5%). Age of the participants ranging from 18-27years. In this study females were more likely to demonstrate awareness of Digital dentistry than males. Significantly Interns showed greater familiarity with advanced applications than fourth year students.

Gender

AGE					
	N	Minimum	Maximum	Mean	Std. Deviation
Age:	200	18	27	21.86	1.893

		Frequency	Percent
Frequency	Percent	65	17.5
65	17.5	135	67.5

Year of the study

		Frequency	Percent
Valid	III BDS	74	37.0
	IV BDS	66	33.0
	INTERN	60	30.0
	Total	200	100.0

Distribution and comparison of responses based on gender:

Item	Response	Males		Females		Chi-Square value	P value
		n	%	n	%		
Q1	1	45	60.8	95	70.3	7.326	0.05*
	2	29	39.1	40	29.6		
Q2	1	15	13.2	25	18.5	10.378	0.016*
	2	17	34.9	41	30.3		
	3	20	35.7	29	21.4		
	4	8	15.8	9	6.6		

P≤0.05 is statistically significant

Distribution and comparison of responses based on year of the study:

Item	Response	III BDS		IV BDS		INTERN		Chi-Value	P-Value
		n	%	n	%	n	%		
Q1	1	54	72.9	40	60.6	31	51.6	16.114	0.04*
	2	20	27.0	26	39.4	29	49.4		
Q2	1	7	15.9	10	12.7	16	13.6	7.842	.797
	2	16	27.6	16	17.6	10	11.6		
	3	7	15.9	15	16.7	20	16.6		
	4	30	49.6	16	17.6	6	10.6		
	5	14	12.6	14	17.5	8	17.5		
Q3	1	6	15	6	15	6	15	11.192	0.513
	2	14	20.6	16	23.5	3	4.4		
	3	18	21.7	14	16.9	9	10.8		
	4	7	15.9	11	25	7	15.9		
Q4	1	6	15.8	6	15.8	14	10.5	17.051	.149
	2	16	16.2	11	29.7	17	12.7		
	3	24	26.7	25	36.7	25	21.5		
	4	16	27.7	12	30.1	4	3.6		
	5	10	12.7	12	21.6	10	16.7		
Q5	1	5	14.3	5	14.3	15	14.3	18.317	0.106

P ≤ 0.05 is statistically significant

DISCUSSIONS

The integration of digital dentistry into dental education presents both opportunities and challenges. The findings from the research indicate that while many dental students recognize the importance of digital technologies, there is a varying degree of familiarity and comfort with these tools. Some students express enthusiasm about the potential of digital dentistry to enhance patient care and streamline workflows, while others may feel apprehensive about adopting new technologies due to a lack of training or exposure.

One key aspect that emerged from the study is the need for comprehensive training programs that not only introduce students to digital tools but also provide hands-on experience. This practical exposure is crucial for building confidence and competence in using digital technologies. Furthermore, educators should emphasize the relevance of digital dentistry in real-world scenarios, highlighting how these tools can improve clinical outcomes and patient satisfaction.

Additionally, the study highlights the importance of fostering a positive attitude towards technology adoption among students. Educational institutions should create an environment that encourages innovation and experimentation, allowing students to explore and engage with digital tools without fear of making mistakes. This supportive atmosphere can significantly enhance students' willingness to embrace digital dentistry as a fundamental aspect of their future practice.

CONCLUSIONS

In conclusion, the integration of digital dentistry into the dental curriculum is essential for preparing students for the evolving landscape of dental practice. The research underscores the importance of understanding dental students' knowledge, attitudes, and perceptions regarding digital technologies. By addressing these factors, dental educators can develop a curriculum that not only equips students with the necessary skills but also instills a sense of confidence in their ability to utilize digital tools effectively.

Moving forward, it is imperative for dental schools to prioritize the incorporation of digital dentistry into their programs. This will ensure that graduates are not only technically proficient but also adaptable to future advancements in the field. Ultimately, a well-rounded education that embraces digital technologies will lead to improved patient care and outcomes, benefiting both dental professionals and the communities they serve.

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