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## RESEARCH ARTICLE

## KNOWLEDGE, AWARENESS, PERCEPTION OF DIGITAL DENTISTRY AMONG DENTAL STUDENTS - "A QUESTIONNAIRE STUDY"

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E-mail: [asmihamand@gmail.com](mailto:asmihamand@gmail.com)**Received:** Apr 15, 2025; **Accepted:** May. 28, 2025; **Published:** May. 31, 2025

## ABSTRACT

**Background:** To find gaps in dental students' education and training, it is essential to examine at their perceptions, knowledge, and awareness of digital dentistry. By examining dental students' present knowledge and awareness of digital dentistry and their perceptions of its importance and significance to their future practice, this study aims to fill this knowledge gap.**Objectives:** To access the Knowledge, Attitude and Practices (KAP) Of Digital Dentistry Among Dental Students.

- **STUDY POPULATION-** Dental Students in Karad region.
- **STUDY DESIGN-** A Questionnaire Study
- **SAMPLE SIZE-** 100 convenience sampling technique
- **Inclusion Criteria:** Fourth-year and Intern dental students who were currently enrolled at the dental school were eligible to participate in the study.
- **Exclusion Criteria:** Students who did not meet the inclusion criteria or those who had not completed their fourth year of dental education were excluded from the study.
- **STUDY TOOL-** 10 set of pre tested questionnaire and demographic details.
- **DATA COLLECTION-** Prior informed consent were obtained to conduct the study from every student who were part of the study. The data collection method used in this study was an online survey using Google Forms. The survey was distributed to the participants via whats-app and was accessible through a unique link. The survey consisted of 10 multiple-choice questions. The data were collected and analyzed using Google Forms' built-in analytics tools, including descriptive statistics and visualizations, to provide a comprehensive overview of the participants' responses.

**Results:** Almost all participants had knowledge about concept of digital dentistry. Results showed that 65% of participants were see themselves using digital dentistry in further career. Results revealed that 71% participants considered that faster diagnosis were main advantage of digital dentistry in future career followed by significant time reduction (63%), better communication (60%), comfort (52%), improved patients experience (49%) and cost (43%) were the other advantages of digital dentistry.

Results also showed that 81% of the participated in the study were prefer RVG which is the part of digital dentistry in their dental practice. 72% participants were agreeing on that digital dentistry can improve patient's outcome in their practice.

**Conclusion:** The results of this study show a favourable outlook on digital dentistry and a willingness to explore new technologies in dentistry. This interest can foster an enriching learning environment, support innovative teaching strategies, and welcome upcoming dental academicians**Keywords:** Perception, Awareness, Digital dentistry, dental

## INTRODUCTION

The way dental care is organized, carried out, and administered has completely changed as a result of the broad use of digital technology in the field of dentistry. Digital dentistry has revolutionized the field of dentistry by offering more accurate, effective, and patient focused care using technologies like 3D printer, intra-oral scanner, computer-aided design and manufacture (CAD/CAM).<sup>1</sup> The introduction of these recent techniques is transforming the entire dentistry.<sup>2,3</sup> Digital technology has been used in clinical practice, but its introduction into dental education is still behind. Because of this, dental students could not be sufficiently equipped to implement this technology into their work, which could cause the gap between the requirements of the curriculum and the demands of modern dentistry.<sup>4</sup>

In addition, the speed at which technology is advancing in dentistry has made it essential for dentists to invest in lifetime learning and ongoing professional development. There is a lack of literature regarding dental student's knowledge of digital dentistry after getting into dental college. Given the increasing interest in technology mainly driven by industry, it is essential to explore whether dental students' knowledge and expectations about digital dentistry are present with the updated dental programs. Understanding dental students' perception and awareness of digital dentistry are vital in influencing institutional admission processes and decision-making regarding resource investment. The complicated aspects of digital dentistry, like the choice and use of digital instruments, the interpretation of digital images, and dealing with of technological problems, are, however, beyond the knowledge and abilities of dental students. Moreover, dental students may become delayed to accept digital technology if they believe it will not be relevant or significant to their future practice due to a lack of exposure to digital dentistry during their dental school.<sup>5</sup>

It is possible to create specialized educational courses and training programs that better prepare dental students for the demands of modern dental practice by acquiring an understanding of the needs and difficulties that arise when implementing digital dentistry.<sup>6,7</sup> In the end, our study will help the dental profession create a workforce that is more educated and able to deliver high-quality patient care that makes use of the latest advances in technology. Hence the present study was carried out to assess the current state of digital dentistry knowledge among dental students, evaluate their perception of its importance and relevance to their future practice, and identify areas for improvement in dental education and training programs.

## METHODOLOGY

This study was a cross-sectional questionnaire study. Data was collected in July 2024. The target population for the study comprised 100 dental students were selected by convenience sampling technique of Karad city.

The questionnaire was written in English. The questionnaire comprised two sections where the first included 4 questions related to demographic data. The second section 10 questions to assess regarding the same. Demographic data includes name and email id, gender, year of pursuing BDS. Out of 10 questions, 4 questions were binomial i.e. having two options: yes or no type.

In order to attain the highest possible accuracy, participation in this study was voluntary and the questionnaire was anonymous and self-administered. The participants were informed the importance of answering the questions correctly and were assured of their confidentiality.

Approval was obtained from the Institutional Ethics Committee prior to onset of the study and after designing the protocol and questionnaire. (057/2024-2025) The respondents were informed about the purpose of the study using information sheets written in English I google form. The responses were anonymized to keep all the information confidential. The data collection method used in this study was an online survey using Google Forms. The survey was distributed to the participants via whats-app and was accessible through a unique link. The survey consisted of 10 multiple-choice questions. The data were collected and analyzed using Google Forms' built-in analytics tools, including descriptive statistics and visualizations, to provide a comprehensive overview of the participants' responses.

## RESULTS

### Demographic finding

Table 1 illustrates the demographic characteristics of the participants. 74% students were female while 26% were male. The findings indicate that 31% of participants were undergraduate students and 69% were Interns.

According to Graph no. 1, almost all the participants were aware about concept of digital dentistry. Graph no. 2, according to likert scale 25% were strongly agree that digital dentistry has useful applications in dental field followed by 51% agree and 18% were neutral. Graph no. 3 showed that 65% of participants were see themselves using digital dentistry in further career.

Graph no. 4 revealed that 71% participants considered that faster diagnosis were main advantage of digital dentistry in future career followed by significant time reduction (63%), better communication (60%), comfort (52%), improved patients experience (49%) and cost (43%) were the other advantages of digital dentistry.

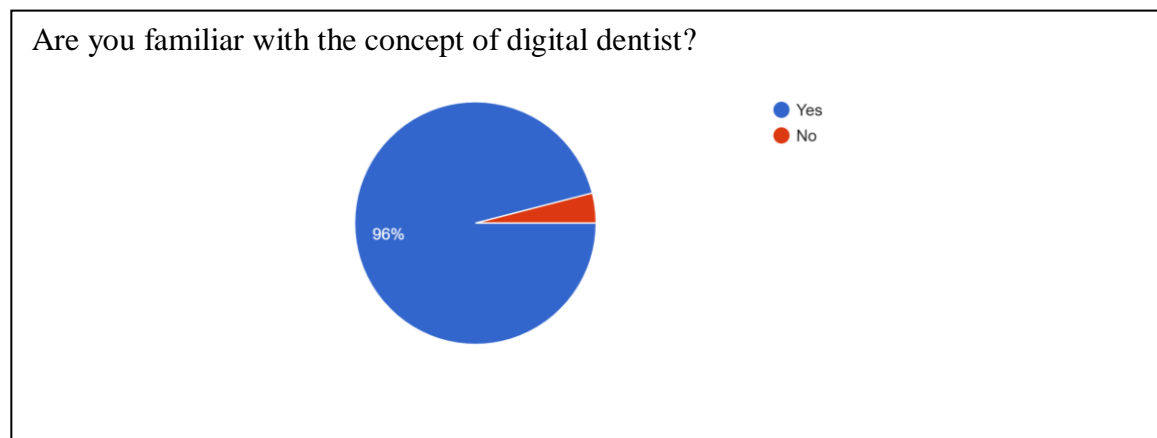
Graph no. 5, the 98% participants think that digital dentistry provide more precise results than conventional dentistry. According to 76% of

participants, digital dentistry can significantly improve the quality of dental care. Results also showed that 81% of the participated in the study were prefer RVG which is the part of digital dentistry in their dental practice. 72% participants were agreeing on that digital dentistry can improve patient’s outcome in their practice. 85% students stating that conferences were the main source of getting updated to latest advances in digital dentistry followed by dental journal (43%), webinars (33%) and college training programs (23%). Making the necessary adjustments to educational resources can be beneficial.

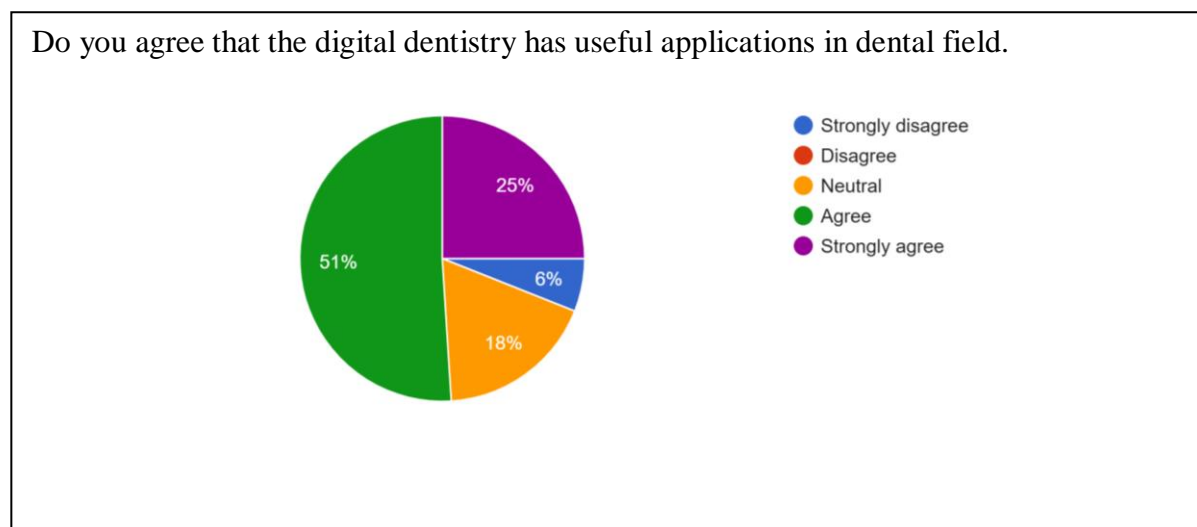
**Table 1. Demographic Data of the Respondents**

Demographic Factors		Frequencies (f)	Percentages (%)
Year of pursuing BDS	UG STUDENTS	31	31
	INTERNS	69	69
Gender	Female	74	74
	Male	26	26

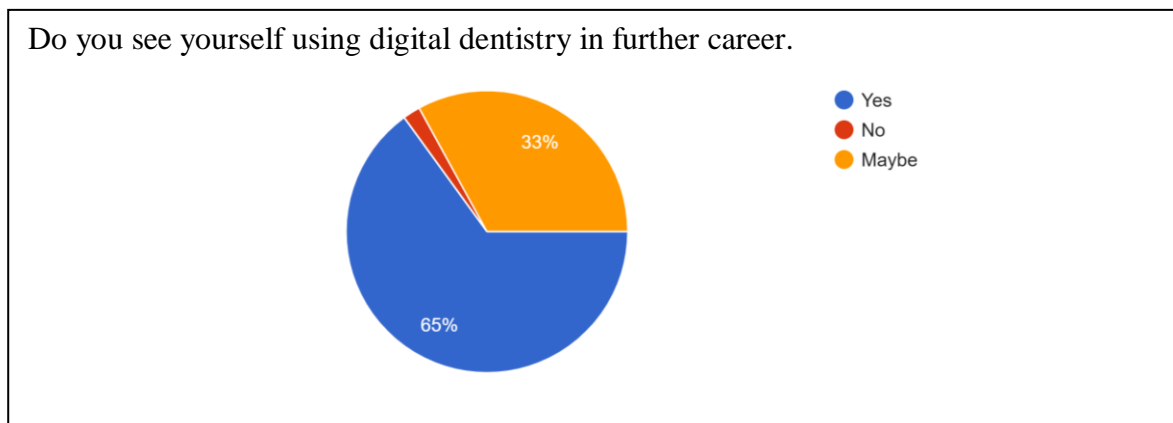
**Graph N1**



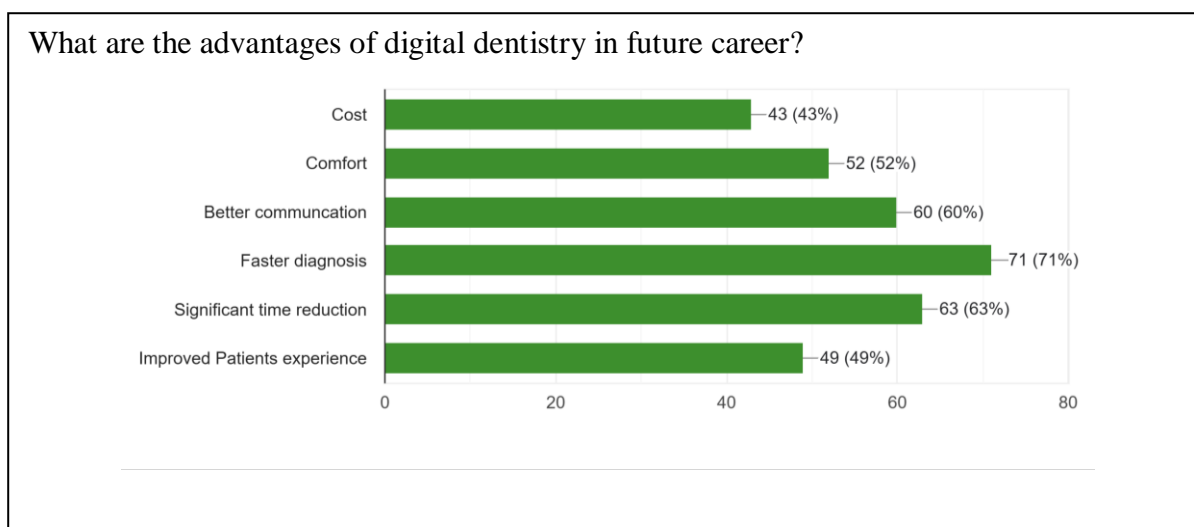
**Graph N2**



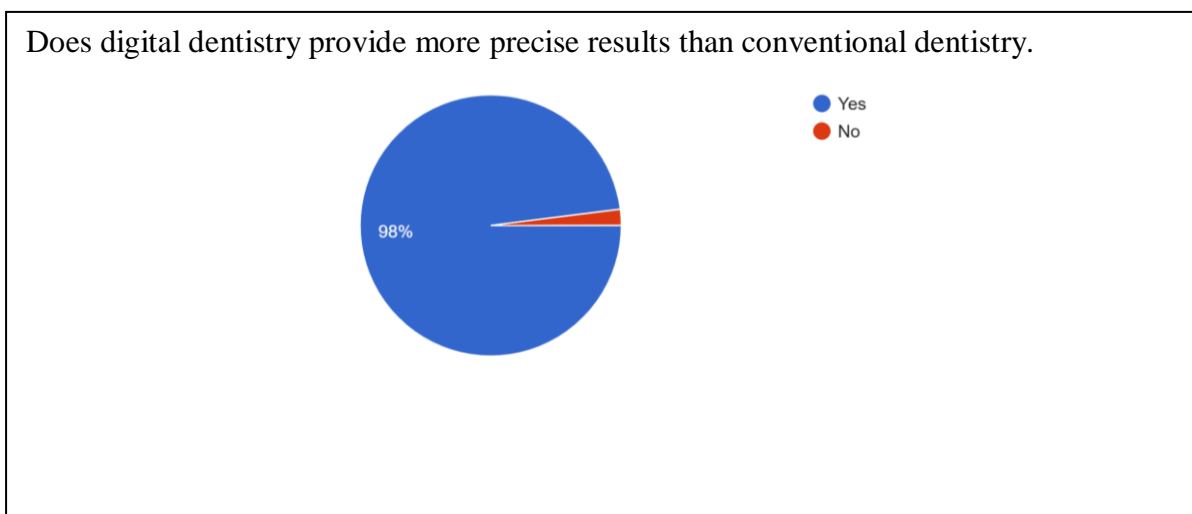
Graph N 3



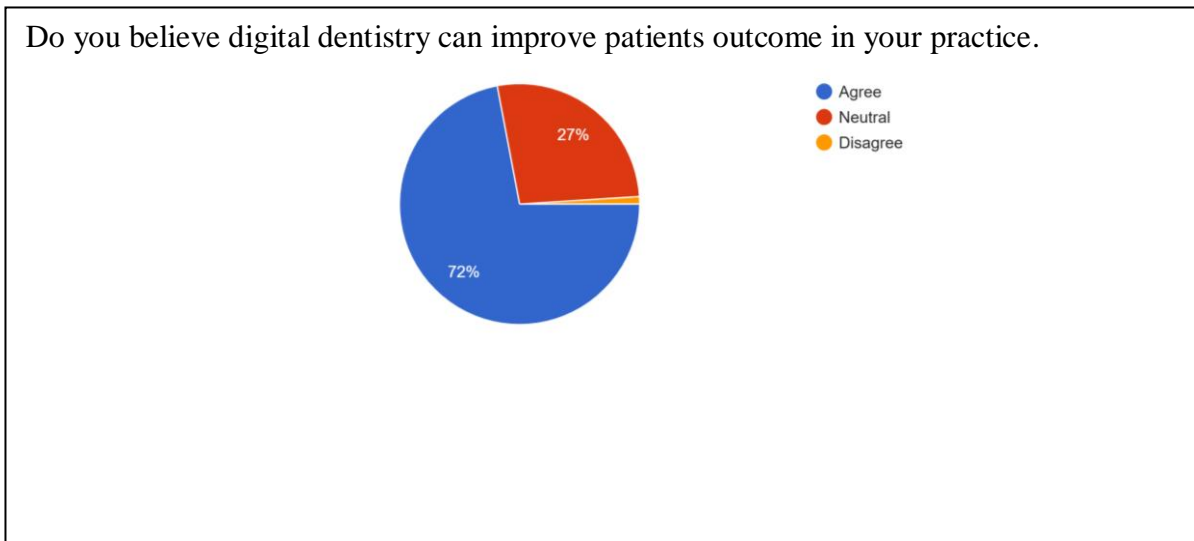
Graph N 4



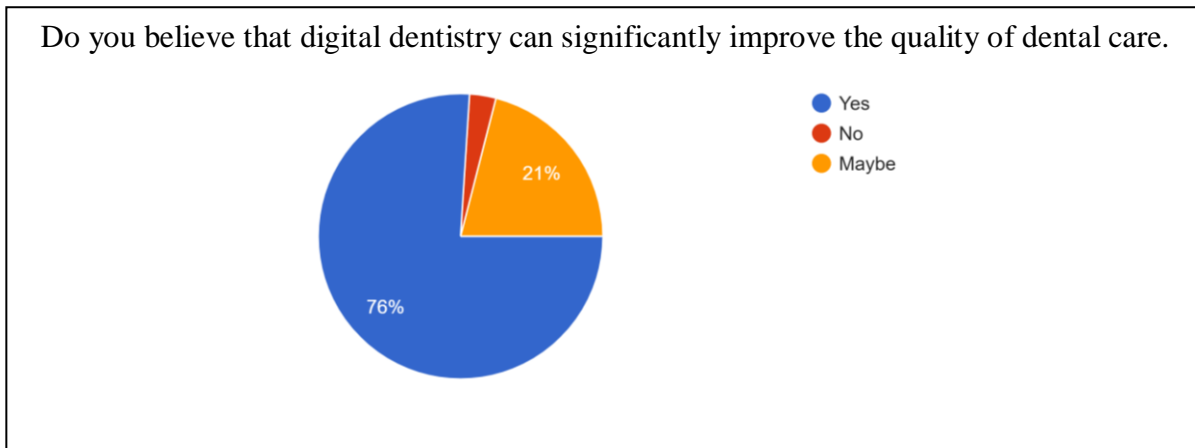
Graph N. 5



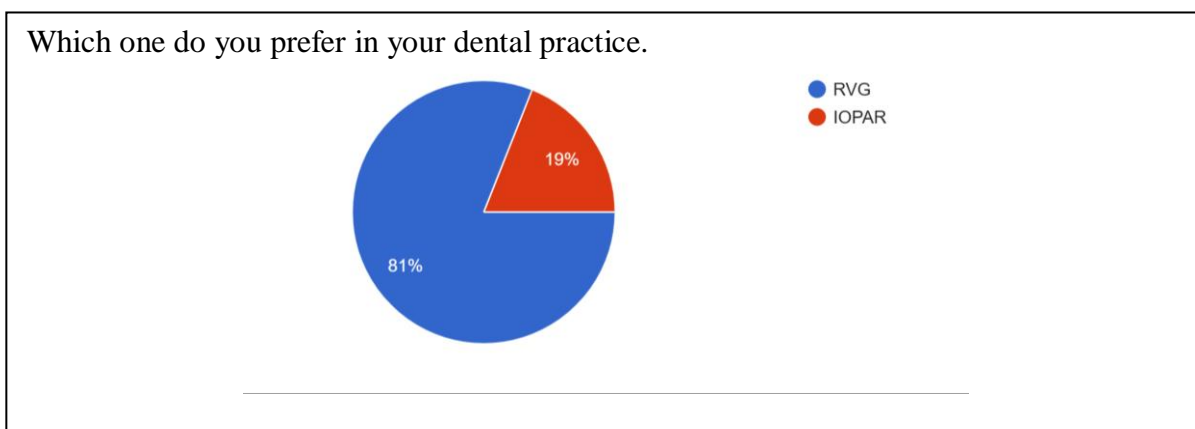
Graph N 6



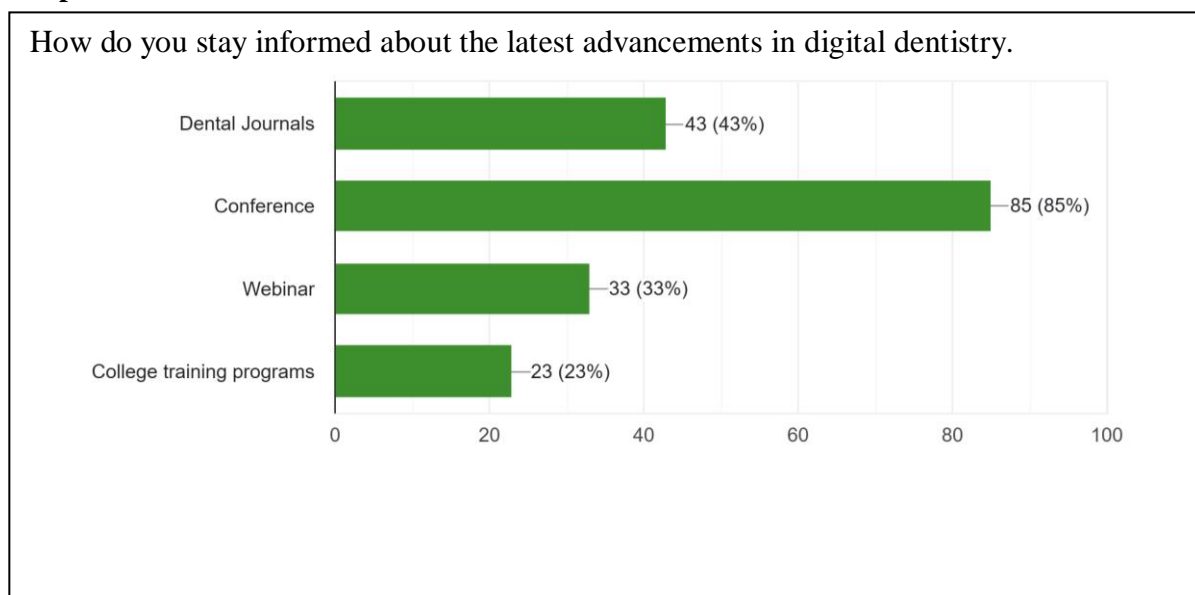
Graph N7



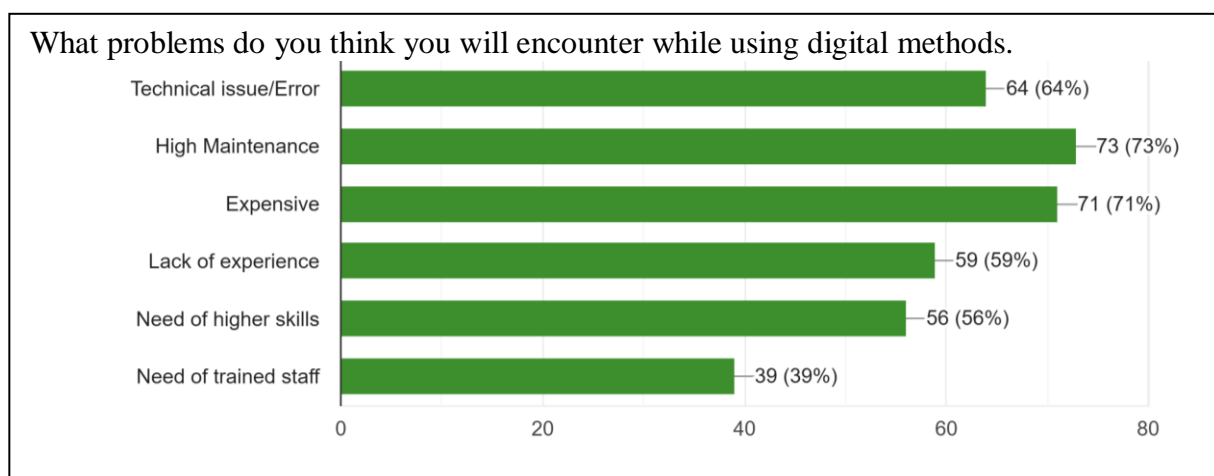
Graph N8



Graph N 9



Graph N10



**DISCUSSION**

As this was a cross sectional questionnaire study focuses on KAP related access the Knowledge, Attitude and Practices (KAP) Of Digital Dentistry Among Dental Students. 100 BDS pursuing students were included in the study, out of which most of were interns.

Everyone in the dental field is looking forward to the future with great excitement because digital dentistry has brought about so many developments in recent years.

The necessity to assess the depth and breadth of dental applicants' knowledge and attitudes toward digital dentistry is growing as a result of the continuous technological advancements that affect the general

It should come as no surprise that 98% of participants anticipated using digital dentistry in the future. It is anticipated that this will forecast interest in digital technology, particularly from a digital perception of this generation. The remaining 2 percent who did not anticipate using digital technology might be a sign that they have a clear idea of the conditions of the practice they plan to join as a provider. It might also be the result of mistrust of technology or ignorance about digital dentistry.<sup>8</sup>

To find out if the students had up-to-date knowledge before entering the field, they were asked questions about how they see and use digital dentistry. According to the findings, the majority of students favor digital dentistry over traditional, substituting IOPAR with RVG. This demonstrates a readiness to acquire new technology and apply them as reliable

means of providing healthcare.<sup>9</sup>

Yet, 21% of students believe that digital dentistry can greatly enhance the quality of dental care. This could be a result of insufficient comprehension of technology, overshadowed by the thrill of simply engaging with a new digital instrument.

A solid grasp of technologies enables effective decision-making for personalized dental care delivery instead of viewing technology merely as an end goal. To safeguard dental education from the influence of the marketing sector, greater focus should be directed towards training dental educators and their teams on new technologies. Furthermore, emphasis should also be given to incorporating this kind of information into the curricula of dental classes and seminars.

In recent years, there has been a rise in both the ability to train dental students and the enthusiasm for pursuing dentistry among potential students. The students were inquired about their anticipations regarding the quantity of dental schools, encompassing digital dentistry.<sup>10</sup> In this research, the majority of students believed that the sources of information about the progress in digital dentistry are journals, conferences, and webinars. This suggests that the dentistry curriculum is not an adequate element in shaping students' understanding of digital dentistry.<sup>11</sup> It might also suggest a distrust in institutional programs to adapt to advancing technology.

The aim of this research was to tackle the deficiency in knowledge and awareness regarding digital dentistry among dental students. It offers crucial insights for dental educators to anticipate future developments in dental curricula and practices, enhancing teaching methods and the admissions procedure.<sup>12</sup> Consider the constraints of this study, which are affected by demographics and personal interpretations linked to how each question is worded. A broader survey involving dental students and first-year dental students can provide valuable insights for comparing the knowledge acquired over a brief period and may identify areas where misconceptions still need to be corrected.

## CONCLUSION

The results of this study show a favourable outlook on digital dentistry and a willingness to explore new technologies in dentistry. This interest can foster an enriching learning environment, support innovative teaching strategies, and welcome upcoming dental academicians. Nonetheless, it is essential for the dental curriculum to emphasize the significance of digital dentistry by incorporating critical thinking, self-directed learning, and comprehension of research.

## DECLARATIONS

### Ethical statement

This study was performed in line with the principles of the Declaration of Helsinki.

### Funding

This research did not receive any specific funding.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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