

Attitude and Knowledge toward the Digitization in Prosthodontics among the Dentists of Kalaburagi City, Karnataka - A Cross-Sectional Survey

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Abstract

Introduction: Digital dentistry includes a broad array of technologies that bring the communication, documentation, manufacture, and delivery of dental therapy under the umbrella of computer-based algorithms. Dentists must stay current with this rapidly developing field to make appropriate choices in their use of technology. Despite the general and other specific advantages available through digital dentistry, significant barriers to adoption remain.

Aim: The study aims to assess the attitude and knowledge toward digitization in prosthodontics among dentists of Kalaburagi city.

Methodology: A cross-sectional survey conducted using a self-administered questionnaire was structured to assess the knowledge and attitude of the dentists of Kalaburagi City. The raw data so obtained after the study was classified, tabulated, and subjected to statistical analysis.

Results: About 92.1% of respondents agreed that digital workflow will reduce the time consumed for prosthetic restoration fabrication and also the same percentage of respondents felt that patient acceptance will be good with the digital workflow. About 92.1% of respondents prefer to use digital workflow in their clinical practice but in contrast, 51.8% of respondents agreed that digital workflow may increase quackery in dentistry.

Conclusion: A relatively small number of oral health providers are using digital workflow in their clinical practice, but most oral health-care providers know this technology and plan to use it in the near future; the vast majority of dentists seem to agree that computer-aided design/computer-aided manufacture will have a significant role to play in the future of dentistry.

Keywords: Prosthodontics, Digital dentistry, Digital work flow, CAD/CAM, Cross sectional survey

INTRODUCTION

Digital dentistry includes a broad array of technologies that bring the communication, documentation, manufacture, and delivery of dental therapy under the umbrella of computer-based algorithms.^[1] The introduction of technology into healthcare has been playing a significant role in helping doctors and other healthcare workers.^[2] It is also an essential ingredient for state-of-the-art patient care. Dentists must stay current with this rapidly developing field to make appropriate choices in their use of technology.^[3]

The application of computer-aided design/computer-aided manufacture (CAD/CAM) technology has evolved rapidly to meet the needs of patients and simplify, as well as standardize the process of fabricating dental restorations. This change

in the traditional workflow affects both clinicians and laboratory technicians.^[4] The demand for esthetic and metal-free restorations has led to the development of high-strength ceramics in dentistry, which may only be used in conjunction with CAD/CAM technology.^[5,6] The ability to provide same-day chair-side restorations with these materials is also

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attractive to both patients and dentists.^[7,8] CAD/CAM found to be successful in the fabrication of crowns and bridgework and it has also shown to be reliable in constructing implant abutments, crowns, and superstructures.^[9]

Despite the general and other specific advantages available through digital dentistry, significant barriers to adoption remain. Several factors influencing the adoption of technology, including familiarity with knowledge and education, are frequently overlooked. The lack of information and skill necessary to integrate and utilize technology efficiently – and the apprehension concerning acquiring this information and skill – are some factors that limit adoption. Other factors frequently mentioned include cost, accuracy or utility, and outcomes.^[1]

Exploration of available literature revealed that studies relating knowledge of digitization in prosthodontics are relatively fewer. None of the studies are done on dentists of Kalaburagi so the present study was undertaken. The study aims to assess the attitude and knowledge toward digitization in prosthodontics among dentists of Kalaburagi city.

MATERIALS AND METHODS

A cross-sectional survey conducted using a self-administered questionnaire was structured to assess the knowledge and attitude of the dentists of Kalaburagi City. A pilot study was conducted to check the reliability of the questionnaire by applying kappa statistics. The kappa value was found to be 0.85 (very good reliability). The questionnaire was distributed to the participants by the investigator after obtaining voluntary informed consent. The raw data so obtained after the study was classified, tabulated, and subjected to statistical analysis. Data were analyzed using SPSS software and standard descriptive statistics was applied.

RESULTS

Questions	Frequency	Percentage
1. How many are aware of CAD/CAM	113 aware of technology	99
2. Prefer to use digital workflow in their clinical practice	105, prefer to use	92.1
3. What type of architecture of CAD/CAM system do they prefer	76, do not know about the CAD/CAM system	66.7
4. Which aspect of the digital workflow do they prefer to use	40, prefer Chairside CAD/CAM, and 36, preferred intraoral scanner	35.1% and 31.6%, respectively

CAD/CAM: Computer-aided design/computer-aided manufacture

DISCUSSION

When questioned about their preferences for a particular technological flow in the clinical use of CAD/CAM systems, 40 of the dentist responded that they would prefer a complete chairside CAD/CAM manufacturing of dental restoration, while 36 dentists would prefer to acquire an intraoral digital

Questions	Agreed	Not agreed (%)
1. Digital workflow reduces the time consumed for prosthetic restorations	92.1%	5.3
2. Digital workflow increases quackery in dentistry?	41.1%	51.8
3. Patient acceptance is good with digital workflow?	92.1%	5.3

Questions	Response	Percentage
1. Criteria for choosing a CAD/CAM system	54, they choose a system that is easy to use	47.4
2. CAD/CAM system would give a competitive advantage?	106, agreed that owning CAD/CAM system gives them an advantage	93
3. Preferred method of disseminating information on CAD/CAM?	80, preferred the workshop and first-hand experience	70.2

CAD/CAM: Computer-aided design/computer-aided manufacture

scanner. About 92.1% of respondents agreed that digital workflow will reduce the time consumed for prosthetic restoration fabrication and also the same percentage of respondents felt that patient acceptance will be good with the digital workflow. Almost all respondents are aware of CAD/CAM technology, but 66.7% of them are unaware of the type of architectures in CAD/CAM systems. This result highlights the fact that CAD/CAM is still a relatively new development in the dental world for most dentists.

About 92.1% of respondents prefer to use digital workflow in their clinical practice but in contrast, 51.8% of respondents agreed that digital workflow may increase quackery in dentistry. This finding highlights a gap in dental education and continuing dental education courses. It may be time for universities to offer formal evidence-based teaching of CAD/CAM technology in dental education curriculum. About 70.1% preferred the workshop and firsthand experience as the preferred method of disseminating information on CAD/CAM. About 20% of respondents agreed that due to the high cost, they do not prefer digital workflow in their clinical practice. This highlighted initial costs as the major obstacle to the incorporation of digital workflows in their clinical practice.

CONCLUSION

Within the limits of this study, the following conclusions could be drawn:

1. At present, a relatively small number of oral health providers are using digital workflow in their clinical practice, but most oral healthcare providers know this technology and plan to use it in the near future
2. The vast majority of dentists seem to agree that CAD/CAM will have a significant role to play in the future of dentistry
3. Our study has shown that even if the concept of “dental CAD/CAM systems” is not completely understood, the subjects of our study are interested to be informed about this topic

4. Most of the respondents due to high initial costs did not prefer the digital workflow in their clinical practice.

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