

DIGITAL TECHNOLOGIES IN STOMATOLOGY

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A B S T R A C T	KEYWORDS
<p>Digitalization in dentistry opens up wide opportunities for improving the quality and effectiveness of the treatment process. This study is devoted to the study of the implementation of innovative digital technologies in dental practice and their impact on the manufacture of prosthetic structures.</p>	

Introduction

Digitalization in dentistry opens up wide opportunities for improving the quality and effectiveness of the treatment process. This study is devoted to the study of the implementation of innovative digital technologies in dental practice and their impact on the manufacture of prosthetic structures. A survey of 30 dentists and 30 patients from two clinics in Moscow was conducted to assess the impact of digitalization on the quality and speed of the treatment process, as well as the convenience of doctor-patient interaction. The methodology included questionnaires and statistical processing of the obtained data. The results showed that the use of technologies such as intraoral scanning, 3D modeling, milling, and 3D printing allows for a 2-3-fold reduction in the manufacturing time of prostheses compared to traditional methods. Patients also positively assessed the possibility of online consultations and virtual "testing" of future constructions. Digital "Godfather" stomatology is French Professor Francois Dure, who invented dental CAD /CAM in 1971.



Digital dentistry is a branch of modern dentistry that includes use of computer technologies or devices that include digital or computer-controlled components for performing dental procedures, and not using mechanical or electrical tools.

- Tasks: performing dental procedures more effectively, quickly, and accurately.
- Advantages: Used as a way to make it easier for the dentist to perform dental procedures manipulation and offer new ways to satisfy growing needs patients.

Digital dental technologies

Some of the technologies used in digital dentistry include:

Intraoral chambers

Intraoral scanners

CAD/CAM

Computer implantation dentistry - including the development and manufacture of surgical templates

Automated crown production

3D printing (for example, for printing physical models of digital images obtained using intraoral scanning, manufacturing ortodontic devices, temporary structures, surgical guides) [3]

Digital radiography

Conus-beam computed tomography (CTCT)

Magnetic resonance imaging

Computed tomography.

Electric and surgical/implantation terminals

Computer Implantology in Stomatology

Photography (extraoral and intraoral)

Software for conducting patient practice and medical documentation, including patient digital training, such as Thalamus Patient Education

Shade selection

Diagnostic

DEXIS KariVou

Dental lasers

Rod - used for anesthesia

Digital X-ray machines (including both direct sensors and systems with an indirect luminophore plate)

Dental magnifiers and dental microscopes

Virtual and augmented reality.

Intraoral chambers

X-rays have been extremely useful for many years in assessing the condition of the oral cavity. However, sometimes the resulting image may contain limited information, as it is only a 2D image. Intraoral chambers allow the operator to see a clear image of the inner surface of the oral cavity. IOCs the size of a dental mirror are equipped with a tiny camera capable of displaying more information on the 3D surface of the tooth than a 2D image. Examples include cavities in certain places and sizes, cracks in teeth, excessive erosion, abrasion, and many others.

Ordinary dental impressions are made by applying the impression material to the impression tray, which is applied to the dental arches. This creates a negative impression of the soft and hard tissues of the oral cavity.

CAD/CAM combined with intraoral scanning

Two studies examined the accuracy of both direct and indirect digital prints used to manufacture clinically acceptable zirconium crowns. It was shown that compared to traditional casting methods, there is a significantly smaller marginal clearance, as well as more precise marginal and internal fitting. [1] [2] The effectiveness and fitting of CAD/CAM-manufactured solid ceramic restorations were evaluated in a double blind randomized clinical trial. Direct digital prints were taken directly from the patient's oral cavity, while indirect digital prints were taken from the already taken prints.[6] Then, digital prints were used to create solid ceramic crowns using CAD/CAM method.[7] Compared to the indirect method, direct digital prints proved to be statistically more accurate and provided significantly better interproximal contact [8].

A high degree of patient involvement in the treatment process is one of the key advantages.

According to the questionnaire data, 67.3% (± 3.7) of patients noted that the ability to view a 3D model of a future prosthesis on a smartphone allows them to participate more actively in decision-making.

This is achieved by the fact that the patient can view and evaluate treatment options at any convenient time and place. If necessary, make adjustments in a timely manner before starting to manufacture the prosthesis. According to the survey, this approach allowed for the satisfaction of up to 100% of patients' wishes and preferences in 62.1% (± 4.0) of cases.

Clear Format transfers ensure the precise transfer of jaw model positions from virtual space to physical space. The conducted research allowed us to obtain important evidence in favor of the high effectiveness of digital technologies in dental practice.

The results of surveys of dentists and patients confirmed that the use of 3D scanning, modeling, and prototyping.

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