

# **Global Robotic Dentistry Market: Analysis By Product and Services (Robot Assisted Systems, Standalone Robots, and Services), By Application (Implantology, Endodontics, and Others), By End User (Dental Hospitals and Clinics, and Dental Academic And Research Institutes), By Region Size and Trends with Impact of COVID-19 and Forecast up to 2029**

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## **Abstracts**

Robotic dentistry refers to the use of advanced robotic technologies in various dental procedures to elevate the precision & effectiveness of oral care practices. The robotic dentistry market encompasses all aspects related to the development, manufacturing, distribution, and utilization of robotic systems and associated technologies within the dental industry. The global robotic dentistry market value stood at US\$458.51 million in 2023, and is expected to reach by US\$1173.14 million by 2029.

Global robotic dentistry market demonstrated a consistent growth, primarily driven by increasing demand from developing countries such as China, India, Middle East, and other APAC countries, aging global population, rising awareness among dental practitioners & patients regarding the benefits of robotic-assisted dental procedures, increasing government support for dental services, growing demand for minimally invasive dental procedures, and increasing number of dental disorders including periodontal disease, dental caries, dental burs, etc. Furthermore, the dental industry is witnessing collaborations between technology companies and dental practitioners to develop and integrate robotic solutions into everyday practice, leading to a continuous stream of innovation & improvements in the field. Increasing collaborations & partnerships between dental technology companies and healthcare institutions will continue to drive innovation and market expansion over the forecast period. The market

is expected to grow at a CAGR of 16.95% over the projected period of 2024-2029.

#### Market Segmentation Analysis:

**By Product and Services:** The report provides the bifurcation of the global robotic dentistry market into three segments on the basis of product and services: robot assisted systems, standalone robots, and services. Robotic assisted systems is the largest segment of global robotic dentistry market as a result of high versatility & adaptability of these systems, consistency of robots in performing repetitive tasks, increasing focus of hospitals and clinics on enhanced patient comfort, growing acceptance and awareness of robot-assisted systems, increasing number of dental disorders, desire for improved precision and efficiency in dental procedures, and enhanced accuracy of these systems during procedures like dental implant surgery, tooth preparation, and more.

**By End User:** According to the report, the global robotic dentistry market, on the basis of end user, can be divided into two segments, namely, dental hospitals and clinics, and dental academic and research institutes. Dental hospitals & clinics is the largest segment of global robotic dentistry market as a result of growing patient population, increasing preference for robotic-assisted surgeries, rise in prevalence of oral diseases and dental tourism, growing adoption of robotic dentistry at dental hospitals and clinics, and presence of skilled healthcare professionals and necessary infrastructure in hospitals to integrate robotic systems. Dental academic and research institutes is the fastest growing segment of global robotic dentistry market as a result of increasing awareness of the benefits of robotic dentistry, surge in use of robotics in healthcare sector, increasing integration of robotic technologies into dental education programs, growing demand for advanced training in new technologies, and rising government support and funding to many dental academic and research institutes for research projects.

**By Application:** The report has segmented the global robotic dentistry market into three applications, namely, implantology, endodontics and others. Implantology is the largest and fastest growing segment of global robotic dentistry market owing to widespread adoption of robotic dentistry in implantology, rising number of individuals opting for a variety of dental procedures, the assurance of precise implant placement using robotic systems, increasing integration of artificial intelligence for real-time diagnostics, and ongoing research and development activities in the field of implantology resulting in continuous improvements in materials, techniques, and procedures.

**By Region:** The report provides insight into the robotic dentistry market based on regions namely, Europe, North America, Asia Pacific, and rest of the world. North America is the largest region of global robotic dentistry market as a result of growing geriatric population, rising number of dental clinics, growing awareness of robotic dentistry among both practitioners and patients, high adoption rate of advanced technologies, large availability of refunds & support from the government, presence of well-established healthcare infrastructure including well-equipped dental practices and hospitals, region's high healthcare expenditure, and presence of key market players in the region, including Dentsply Sirona, BIOLASE, Inc., Institut Straumann AG, Neocis, etc.

Asia Pacific robotic dentistry market is the fastest growing region of global dentistry market as a result of burgeoning population, growing awareness of advanced healthcare technologies, rising dental tourism in countries like India and Thailand, increasing number of dental professionals, rising incidence of dental diseases, and the growing number of implant procedures. Also, China, Japan, the Middle East, Australia, and India are the some of the emerging markets for robotic dentistry systems. In most of these geographies, the market is in a primitive stage. The high growth potential of these markets can be attributed to their expanding middle-class population and increasing income levels. The expeditious increase in the incidences of oral health disorders, developing oral healthcare infrastructure, willingness to spend on dental treatments due to an increase in disposable incomes, and increase in the awareness of oral hygiene are expected to spur the demand for robotic dentistry.

#### Market Dynamics:

**Growth Drivers:** The global robotic dentistry market has been rapidly growing over the past few years, due to factors such as growing geriatric population, surging market for dental tourism, rising number of dental clinics, increasing demand for dental implants procedures, increasing incidences of dental diseases, etc. Elderly are more susceptible to dental problems and require more extensive dental care, including complex procedures such as restorative procedures, dental implants, crowns, and periodontal treatments, increasing the demand for advanced dental care and the use of robotic dentistry to address these complex dental issues. In addition, during implant surgery, robotic systems can navigate the complex anatomical structures of the oral cavity with ease, making it essential for the long-term success of dental implants. Therefore, increasing popularity of dental implants as a long-lasting and aesthetically pleasing option for tooth replacement, will continue to boost the growth of global robotic dentistry

market in the forecasted period.

**Challenges:** However, the global robotic dentistry market growth would be negatively impacted by various challenges such as, high investment cost of robotic dentistry, lack of skilled dental practitioners and concerns regarding reliability, etc. The cost of robotic surgery is a significant disadvantage. It is observed that high installation cost of robotic surgery system results in an increase in surgical procedure costs. The exorbitant cost of robotic systems prevents small and medium sized dental businesses to invest in robotic systems. Moreover, concerns regarding the reliability of robotic systems during critical dental procedures act as a substantial restraint. The fear of technical malfunctions or errors in robotic systems could impede the trust and confidence necessary for broad market acceptance of robotic dentistry, impeding the overall market growth.

**Trends:** The global robotic dentistry market is projected to grow at a fast pace during the forecasted period, due to increasing integration of AI and ML technologies, growing demand for minimally invasive procedures, ongoing development of compact and portable robotic systems, increasing demand for teledentistry and remote consultations, etc. Increasing patients' awareness and a preference for less invasive interventions have fueled the demand for minimally invasive dental procedures provided by robotic dentistry. Also, the adoption of minimally invasive robotic techniques has reshaped the way dental professionals approach treatment planning and execution. Also, increasing advancements in robotics, namely, miniaturization of components like motors, sensors, and actuators, are been paving the way for smaller and more portable dental robots. Therefore, ongoing development of compact & portable robotic systems is expected to boost the growth of robotic dentistry market over the years.

#### Impact Analysis of COVID-19 and Way Forward:

COVID-19 brought in many changes in the world in terms of reduced productivity, loss of life, business closures, closing down of factories and organizations, and shift to an online mode of work. The growth of the global robotic dentistry market was negatively impacted due to COVID-19 pandemic. Lockdown policies imposed by the government to prevent the spread of virus forced various industries to either shut down or run low on production capacity, resulting in increased delays and lower production of robotic dentistry systems as well as other medical devices, with manufacturers facing greater challenges in maintaining production schedules, meeting demand, and ensuring product quality. Additionally, manufacturers had to implement new safety protocols to protect workers from the virus, such as social distancing, sanitation measures, and shift rotations. These measures slowed down production and added additional challenges to

the manufacturing process.

#### Competitive Landscape:

The global robotic dentistry market is consolidated, with few players accounting for majority of market revenue, and competing to offer superior products in the business space. Major companies operating in the market have a wide product portfolio, strong distribution networks, and significant investments in research and development, giving them a competitive edge in the market. The key players of the market are:

Dentsply Sirona

BIOLASE, Inc.

Straumann Group (Institut Straumann AG)

3Shape A/S

Neocis; Planmeca Oy

X-Nav Technologies

Navigate Surgical Technologies Inc.

Image Navigation Ltd.

Companies in the market compete on the basis of product quality offered. Major players in this market focus on expanding their manufacturing facilities, R&D investments, infrastructural development, and leverage integration opportunities across the value chain. For instance, on November 15, 2022, Neocis, announced that the Yomi system has received 510(k) clearance from the U.S. Food and Drug Administration (FDA) for guided bone reduction, that assists clinicians in planning and operative phases of dental implant placement via interactive digital planning (using YomiPlan software) and physical guidance of surgical instrumentation.

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