

CHAPTER 3

ARTIFICIAL INTELLIGENCE IN DENTISTRY

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INTRODUCTION

Artificial intelligence (AI) has become one of the key drivers of rapid transformation in healthcare services in recent years. In particular, advances in big data analytics, image processing, and clinical decision support systems have opened new horizons in dental practice. The increasing use of AI-based technologies in numerous fields such as education, diagnosis, treatment planning, and patient follow-up carries the potential to enhance both the efficiency of clinical processes and patient satisfaction.

Applications of artificial intelligence in dentistry not only facilitate clinical diagnosis and treatment stages but also make significant contributions to education, management, patient communication, and ethical dimensions. Especially in areas such as digital imaging, prosthetic design, orthodontic assessment, and teledentistry, the innovations provided have enabled these technologies to be rapidly integrated into clinical practice.

This book chapter aims to provide a comprehensive overview of the applications of artificial intelligence in dentistry. Contributions of AI will be evaluated across a wide spectrum, ranging from educational and simulation systems to clinical decision support applications, from imaging and diagnostic methods to restorative, prosthetic, and orthodontic planning. In addition, the current status and future perspectives will be discussed in the context of patient communication, managerial processes, and ethical-legal frameworks.

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