AN ANALYSIS OF THE FACTORS DETERMINING DENTAL TREATMENT FEES

Iulian Costin Lupu[1], Raluca Elena Baciu[1]*, Dana Gabriela Budala[1], Roxana Vasluianu[1], Răzvan Constatin Brânzan[2], Norina Consuela Forna[1]

[1] "Grigore T. Popa" University of Medicine and Pharmacy, Iași, Romania, Faculty of Dental Medicine, Department of Implantology, Removable Dentures, Dental Technology
[2] "Grigore T. Popa" University of Medicine and Pharmacy, Iasi, Romania, Faculty of Dental Medicine, Department of Cariology
* Corresponding authors: raluca_baciu2002@yahoo.com

ABSTRACT

Dental fees vary significantly across regions, providers, and services. These fees are determined by a combination of factors, including the dentist's specialization, the complexity of treatments, the geographical location of the practice, operational costs, and investments in technology. Additionally, the experience, skills, level of training, and specialization of the practitioner play significant roles in determining treatment costs. Using advanced equipment and high-quality materials enhances the quality of services but also increases costs. The utilization of advanced equipment and high-quality materials enhances service quality but also contributes to increased expenses. Market competition and healthcare policies further impact patients' access to dental treatments. Consequently, dental fees should strike a balance between the economic sustainability of dental practices and the need to offer services that are both accessible and competitive. By examining these critical elements, this paper aims to provide insights into the complexities of dental pricing by examining its impact on the quality, competitiveness, accessibility, and affordability of dental care.

Keywords: dental fee, clinical, determined factors, direct costs, specialisation, expenses planning, dental team, technologies, material acquisition

INTRODUCTION

Dental care is an essential component of overall health and well-being, yet the cost of dental services remains a significant concern for many individuals. Unlike general medical care, which often benefits from extensive insurance coverage and government support, dental fees are influenced by a myriad of factors that contribute to price variations. This paper examines the primary determinants of dental fees to understand their impact on dental service affordability and accessibility. Various economic, technological, and geographical factors influence dental fees. Key determinants include the dentist's specialization, the complexity of procedures, the location of the practice, operational costs, and investments in technology. Technological advancements and modern equipment can enhance treatment quality but also require significant investments, which affect pricing. Additionally, competition in the dental services market and healthcare regulations impact patient access to treatments. Consequently, establishing a fair fee structure involves balancing the financial sustainability of the practice with the accessibility of services for patients.

Geographic Variation

Location is a major factor in dental pricing. Different countries and states have varying fee structures due to differences in legislation, taxes, labour costs, insurance policies, governmental regulations and standard of living. For example, dental services in the United States tend to be more expensive than in countries with universal

DOI : 10.62610/RJOR.2025.1.17.13

healthcare systems like in some countries in the UE, where government subsidies help lower costs.

The report "Health at a Glance: Europe 2024" states that EU residents averaged 1.2 dental visits per year in 2022, with consultations ranging from 0.3 in Romania to 3.3 in the Netherlands. The low utilisation in Romania, despite high dentist availability, reflects limited public funding and high out-of-pocket costs, pushing many residents to forgo oral care. Public funding accounts for just 7% of dental spending in Romania, compared with 65% in France and Germany. Conversely, the Netherlands, despite dental care not being comprehensively covered for adults, achieved a high consultation rate owing to prevention-focused education programmes, which fosters early awareness and routine care in children. Croatia was also observed to exemplify effective early oral health promotion, highlighting the role of systemic efforts in improving dental health outcomes. [1,2]

Additionally, fees for the same type of treatment can vary across different regions within the same country.

In metropolitan areas, the cost of living and operating a business is higher, leading to elevated dental fees. Conversely, rural dental practices may have lower fees due to reduced overhead costs, although access to specialized dental care may be limited.

Market Influences

Market dynamics play a significant role in determining dental fees. Various factors, including competition among dental clinics, availability of alternative treatments, and consumer behaviour, influence pricing.

Competition among dental providers influences pricing structures significantly. In regions where there is a high concentration of dental clinics, competitive pricing tends to lower fees. Conversely, in areas with fewer dental providers, higher fees may be observed due to reduced competition. The report indicated a significant variation in the number of dentists across EU countries, with figures ranging from 0.5 to 1.3 dentists per 1,000 inhabitants. Greece, Cyprus, Portugal, Bulgaria and Romania had the highest per capita numbers, although figures for Greece and Portugal may be inflated, as they include all licensed dentists (i.e. also those who have retired or emigrated, for example). [1,2]

The pricing of treatment options is influenced by the availability of alternatives or lower-cost solutions. Patients opting for alternative treatments, such as traditional braces instead of Invisalign, may incur lower costs, whereas those seeking premium services will be subject to higher fees.

Consumer demand for premium dental services, including cosmetic dentistry, significantly impacts the pricing framework within the industry. Additionally, trends in dental tourism, where patients seek treatment in countries with lower costs, contribute to market-driven adjustments in pricing strategies.

Economic Factors

Economic elements play a critical role in determining dental fees. The field of dentistry is capital-intensive, requiring substantial investment in infrastructure, equipment, and human resources. The pricing of dental treatments is shaped by various financial obligations that a clinic must fulfil to remain operational and profitable.

There are different categories of expenses that impact dental fees. These categories can be divided into overhead (indirect) and direct expenses. Generally, overhead expenditures remain almost constant, while direct expenses vary based on the number of patients and types and number of treatments.

The **overhead costs** that support the clinic's operation are not directly tied to any specific treatment. **Rent and utilities** refer to the expenses for leasing the clinic space,

DOI : 10.62610/RJOR.2025.1.17.13

including electricity, water, and internet services. **Administrative Salaries** encompass remuneration for receptionists, office managers, and non-clinical personnel. **Marketing and Advertising** expenses include costs for promoting the clinic through digital advertising, social media platforms, and traditional marketing methods. [11,12] **Depreciation of Equipment** refers to the reduction in value over time of dental chairs, X-ray machines, and other high-cost assets. **Office Supplies and IT Expenses** cover computers, record management systems, scheduling software, and office materials [5,9]. **Legal and Compliance Costs** include licensing fees, insurance, and health regulation compliance costs. **Cleaning and Maintenance** cover professional cleaning, biohazard waste disposal, and maintenance of dental equipment. **Staff Training and Development** cover expenses for professional development and ongoing education for team members. [7,10,12,30] **Amortization of Initial Investment** is a frequently overlooked indirect expense is the **amortization of the initial investment** necessary for establishing a dental clinic. This encompasses **interior design, spatial arrangement, and specialized furniture**, which are crucial for creating a professional and comfortable environment for patients. These expenses are generally distributed over several years to accurately reflect their long-term contribution to clinic operations.

Direct Expenses (Direct Costs) refer to expenses that are directly related to providing dental treatments and services to patients. **Dental Materials and Consumables** include resin composites, adhesives, endodontic files, rubber dams, gloves, masks, and sterilization supplies used in dental procedures. High-quality materials, such as composite resins, ceramics, and implant components, also add to the overall cost structure. The choice of materials in dental treatments significantly influences treatment costs. High-quality materials enhance durability and effectiveness, often resulting in higher fees, while more affordable materials may lower expenses but can affect patient satisfaction and the longevity of treatments. **Equipment and Instruments** include X-ray machines, dental chairs, handpieces, physio dispensers, scanners, 3D printers, CADCAM systems, and other tools necessary for treatment. [18,19,26,28] The initial investment in such equipment is substantial, and ongoing maintenance adds to the clinic's operational costs. Technological advancements also necessitate periodic upgrades, contributing to continuous financial outlay. While investments in technology may initially seem costly, they can lead to cost efficiency over time. The accessibility of digital information, such as scanners facilitating easy transmission to laboratories and improved dentist-technician communication, helps streamline workflows, reduce errors, and enhance overall treatment efficiency. **Labor Costs** (for Dentists and Hygienists) refer to the salaries and wages paid to dental professionals responsible for directly providing patient care. **Laboratory Fees** refer to the expenses incurred from outsourcing dental procedures, including crowns, bridges, and dentures, to specialised dental laboratories. **Medication and Pharmaceuticals** are Drugs and anaesthetics administered directly to patients during treatment. **Patient-Specific Costs** include any costs directly tied to a treatment, such as implants, orthodontic appliances, or surgical guides. **Inflation** also affects the cost of dental materials and supplies, directly impacting pricing.

The Complexity of Clinical Cases, such as full mouth rehabilitations, indirect restorations, or cases involving the management of challenging scenarios (e.g., patients with parafunctions or complex

DOI : 10.62610/RJOR.2025.1.17.13

medical histories), necessitates additional time and expertise. Consequently, this is reflected in higher fees. The qualifications, experience, and reputation of a dentist significantly impact pricing. Highly skilled professionals with years of experience or specialization in fields such as surgery orthodontics, periodontics, or cosmetic dentistry tend to charge higher fees. [16,17,27,32,33]

The **number of time units** of a dental procedure also influences the fees for each type of treatment. The length of a time unit may differ among dental practices, ranging from 5 minutes, 15 minutes to 30 minutes depending on the predominant type of treatment being provided. Additionally, the time units required for each type of treatment is influenced by multiple factors, including the experience of the dentist, the quality of materials, and the complexity of the case. Experienced professionals may carry out treatments more efficiently, thereby decreasing chair time. Conversely, highly complex cases, such as full-mouth rehabilitations or intricate prosthetic work, necessitate a larger number of time units. The duration of each treatment directly influences pricing, as longer procedures elevate labour costs and limit the number of patients a clinic can accommodate within a specified timeframe. [3,7,8]

Specialization and Additional Training

Specialists need more education and training, boosting their expertise and service quality. Thus, they charge higher fees than general dentists. Professional accreditation and board certifications also affect prices.

In the same time **renowned dentists** with a strong reputation often have higher demand, allowing them to charge premium rates. Patients are often willing to pay more for services provided by a trusted and experienced practitioner.

Other aspects that can influence the fee include the level of health education and patients' perceptions of the value of treatment. According to cultural norms, social values also affect their likelihood of seeking dental care. Furthermore, market demand and supply dynamics impact dental fees. The higher demand for specialized procedures often results in increased costs.

A lack of comprehensive understanding of the factors affecting fees can lead to significant stress among dentists, potentially resulting in burnout, due to uncertainties about achieving adequate earnings. Consequently, this will lead to hesitancy toward future investments. Financial uncertainty and pricing insecurities may increase stress, reduce job satisfaction, and discourage professional growth and technological advancements.

The manager's responsibility is to ensure that the clinic achieves a sustainable profit level by balancing revenue with operating costs and reinvestment requirements. **The profit percentage** varies between clinics and consequently affects the treatment fees.

An example of a mathematical formula for calculating dental treatment fees that integrates several financial aspects of a dental practice to ensure both profitability and fair compensation for the dental professionals involved. The components of this formula consist of Direct Costs, Indirect Costs, Amortization of Initial Investment, Cost per time unit, number time units needed for the treatment, Profit Percentage of the Firm, and Dentist's Fee Percentage, instead of a fixed salary.

The formula:

Fee= (Direct Costs + Indirect Costs + Amortization of Initial Investment) / per time unit × number of time unit × (100+Profit Percentage of the Firm + Dentist’s Fee Percentage)

This formula ensures that the final fee charged to the patient comprehensively

DOI : 10.62610/RJOR.2025.1.17.13

covers all costs while also providing for the profitability of the practice and appropriate compensation for the dentist. It allows for a systematic approach to pricing that supports the economic aspects of dental practice management.

Methods for Controlling Fees To maintain fair pricing while ensuring sustainability, clinics can implement various control mechanisms: **Cost Monitoring:** Regular audits of expenses help ensure that operational costs remain within an optimal range. **Dynamic Pricing Models:** Adjusting fees based on demand, patient volume, and economic conditions can enhance financial stability. **Standardized Treatment Protocols:** Implementing standardized protocols for common procedures ensures consistency in pricing and prevents unnecessary cost variations. [5,6,7,30,31] **An effective team and a systematically organized dental practice** can significantly enhance operational efficiency. This streamlined approach not only reduces the time spent on each procedure but also minimizes downtime between appointments. By optimizing workflow and resource allocation, the practice can handle more patients efficiently, potentially reducing the costs associated with prolonged treatment times. Consequently, this efficiency allows the practice to offer more competitive and accessible fees to patients, making dental care more affordable without compromising on quality. [3,6,13,14,15] **Efficiency Improvements:** Reducing treatment times through technology and optimized workflows can control costs while maintaining service quality. [5,6,7,8,9] **Transparent Pricing Policies:** Clear communication with patients about pricing structures enhances trust and reduces potential disputes. [12,31,34,35] Periodically adjust the fees in accordance with **inflation rates**. This approach helps manage any fluctuations in costs, preventing them from significantly impacting the overall expense calculations for the fees

CONCLUSIONS

The financial structure of a dental clinic is composed of multiple fixed and variable costs that directly influence treatment pricing. Understanding and properly managing these costs is essential for ensuring both financial sustainability and high-quality patient care. The integration of technological advancements, efficient resource management, and optimized pricing models can help clinics remain competitive while maintaining profitability. Furthermore, transparent and well-structured pricing strategies contribute to a more predictable and stable economic environment for both dentists and patients. Future research should explore additional cost-reduction techniques and innovative models for increasing efficiency in dental practice management.

REFERENCES

1. OECD/European Commission (2024), *Health at a Glance: Europe 2024: State of Health in the EU Cycle*, OECD Publishing, Paris, https://doi.org/10.1787/b3704e14-en.
2. Righolt AJ, Walji MF, Feine JS, Williams DM, Kalenderian E, Listl S. An International Working Definition for Quality of Oral Healthcare. JDR Clin Transl Res., 2020; 5(2): 102–106. Available from: doi. org/10.1177/2380084419875442.
3. Ioan I. Gall: Asistenta stomatologica p. Ed Didactica și Pedagogica 1971

DOI : 10.62610/RJOR.2025.1.17.13

4. Lupu IC, Carausu EM, Forna NC. Burnout in dentists: Efects and solutions. RJMDE (Romanian Journal of Medical and Dental Education), 2019; 8(3): 47-46, ISSN: 2393-1513; ISSN-L: 2393-1108.
5. Lupu IC, Vasluianu RI, Baciu R-E, Agop-Forna D, Tibeică SC, Forna NC. The integration of artificial intelligence in dental practice. *Romanian Journal of Oral Rehabilitation* 2023; 15(2):272-279.
6. Lupu IC, Mihăilă CB, Stamatin O, Vasluianu RI, Agop-Forna D, Tibeică SC, Forna NC. Strategies For Increasing The Efficiency Of The Dental Practice Activity - Part II, *Romanian Journal of Oral Rehabilitation* 2023; 15(3): 61-65,
7. Lupu IC, Forna NC, Baciu RE, Budală DG, Tibeică SC, Luca OE, Strategies For Motivating And Retaining Human Resources In Dentistry, *Romanian Journal of Oral Rehabilitation* 2024, 16(2): 652- 656,
8. Lupu IC, Baciu RE, Budală DG, Vasluianu RI, Tibeică SC, Forna NC. The Implementation Of Protocols In Dental Practice Procedures, *Romanian Journal of Oral Rehabilitation* 2024, 16(4): 651- 657,
9. Surlari Z, Budală DG, Lupu CI[3], Stelea CG, Butnaru OM, Luchian I. Current Progress and Challenges of Using Artificial Intelligence in Clinical Dentistry-A Narrative Review. *J. Clin. Med*. 2023; 12(23):7378.
10. Finkbeiner BL, Finkbeiner CA. Practice Management for the Dental Team, 9th ed. Elsevier. St. Louis, MO. 2020.
11. Cărăușu EM, Dascălu CG, Lupu IC, Burlea LȘ, Feier RD, Zegan, G. Marketing in Dentistry: Opinion Survey on Promotion of the Dental Office. Revista de Cercetare si Interventie Sociala, 2018; 63: 346-358.
12. Cărăușu EM, Zegan G, Dascălu CG, Golovcencu L, Anistoroaie D. Principii și standarde de comunicare profesională în Medicina Dentară, p. 134-138. Uniformity and Diversity in Teaching Medical Sciences Today, Ed. Grigore T Popa, UMF, Iasi, 2018; ISBN: 978-606-544-468-3. Cap. I. Medicina:
13. Maccario Robert : "L'organisation du cabinet dentaire" Ed Sante-Parresia, 2021
14. Edmond Binhas La gestion du temps au cabinet dentaire, Ed Sante-Parresia, 2022
15. Edmond Binhas La présentation des plans de traitement, Ed Sante-Parresia, 2022
16. Vasluianu RI, Ungureanu D, Jitaru D, Ioanid, AD, Forna NC. Crevicular C-telopeptide and C-propeptide of type I collagen are markers of parodontal disease evolution in diabetic and non-diabetic patients. Rev Med Lab. 2012; 20(2):173-180
17. Lupu, I.C.; Checherita, L.E.; Antohe, M.E.; Stamatin, O.; Teslaru, S.; Hamburda, T.; Tarevici, E.L.; Bulancea, B.P.; Trandafirescu, M.; Gena Dascalu, C.; et al. A Retrospective Clinical Trial Regarding Oral Rehabilitation Diagnosis Strategies Based on Stomatognathic System Pathology. Biomedicines 2023, 11, 622
18. Aminov, L.; Sindilar, E.V.; Pasca, A.S.; Antohi, C.; Decolli, Y.; Stamatin, O.; Costin, L.I.; Bulancea, B.P.; Francu, L.; Mihalas, E.; et al. In Vivo Evaluation of Biocompatibility of Three Biomaterials Used in Endodontics for Prosthetic Purposes in Complex Rehabilitation Treatment. *Appl. Sci.* **2021**, *11*, 6519.
19. Baciu ER, Budală DG, Vasluianu R-I, Lupu CI, Murariu A, Geleț GL, Zetu IN, Diaconu-Popa D, Tatarciuc M, Nichitean G, Luchian I. A comparative analysis of dental measurements in physical and digital orthodontic case study models. *Medicina* 2022
20. Bosînceanu DG, Bosînceanu DN, Luchian I, Baciu R, Tatarciuc M, Mârțu I. Complete dentures-clinical behavior and patients complaints. *Romanian Journal of Oral Rehabilitation* 2017; 9(2):5-8
21. Bosînceanu DN, Bosînceanu DG, Bolat M, Baciu R, Forna N. Flexible acrylate versus classic-viable therapeutical solution. *Romanian Journal of Oral Rehabilitation* 2016; 8(1):7-11.
22. Luchian I, Budală DG, Baciu ER, Ursu RG, Diaconu-Popa D, Butnaru O, Tatarciuc M. The involvement of photobiology in contemporary dentistry-a narrative review. *International Journal of Molecular Sciences* 2023; 24(4):3985
23. Checherita LE, Lupu IC, Stamatin O, Manuc D -, Aesthetic and Functional Oral Rehabilitation with Occlusal Trays, Ultrasonotherapy, and Tolperisone Hydrochloride Treatment in Patients with

DOI : 10.62610/RJOR.2025.1.17.13

Dysfunctional Syndrome of the Stomatognathic System and Muscular Affectation, *Revista de chimie*, 2018; 69(7), 1752-1755.

24. Vasluianu RI, Murariu A , Forna D, Antohe ME, Forna NC. Impact of Diabetes Melitus in Oral Rehabilitation. Romanian Journal of Oral Rehabilitation. 2012; 4(3):14-17
25. Murariu A, Hanganu C, Vasluianu R. Oral impact on quality of life amoung young adults in Iasi. Romanian Journal of Oral Rehabilitation. 2012; 4(3):18-22.
26. Geleţu GL, Burlacu A, Murariu A, Andrian S, Golovcencu L, Baciu ER, Maftei G, Onica N. Customized 3D-printed titanium mesh developed for an aesthetic zone to regenerate a complex bone defect resulting after a deficient odontectomy: a case report. *Medicina* 2022; 58(9):1192.
27. Bulancea B, Vasluianu R, Tatarciuc M, Bulancea A, Checherita L, Baciu R. Oral rehabilitation methods through the combination of different prosthetic techniques. Romanian Journal of oral rehabilitation. 2019; 11(2): 266-273
28. Geleţu GL, Burlacu A, Murariu A, Andrian S, Golovcencu L, Baciu ER, Maftei G, Onica N. Customized 3D-printed titanium mesh developed for an aesthetic zone to regenerate a complex bone defect resulting after a deficient odontectomy: a case report. *Medicina* 2022; 58(9):1192.
29. Checherita, L.E.; Antohe, M.E.; Stamatin, O.; Rudnic, I.; Lupu, I.C.; Croitoru, I.; Surdu, A.; Cioloca, D.; Gradinaru, I.; Francu, L.; et al. Periodontal Disease Diagnosis in the Context of Oral Rehabilitation Approaches. *Appl. Sci.* 2022, *12*, 9067.
30. Cărăușu EM. Studiul abilităţilor de lucru în echipa stomatologică. Rev. Medicina Stomatologică, 2000; 4(3): 82-87. ISSN: 1453-1224.
31. Lupu IC, Carausu EM, Forna NC. The Importance of Control Elements in the Dental Office Management. RJOR (Romanian Journal of Oral Rehabilitation), 2014; 6(2): 33-37, eISSN: 2066-7000. ISSN-L 2601-4661
32. Budală, D.G.; Lupu, C.I.; Vasluianu, R.I.; Ioanid, N.; Butnaru, O.M.; Baciu, E.-R. A Contemporary Review of Clinical Factors Involved in Speech-Perspectives from a Prosthodontist Point of View. *Medicina* 2023, *59*, 1322.
33. Budală, D.G.; Balcoș, C.; Armencia, A.; Virvescu, D.I.; Lupu, C.I.; Baciu, E.R.; Vasluianu, R.I.; Tatarciuc, M.; Luchian, I. Does the Loss of Teeth Have an Impact on Geriatric Patients' Cognitive Status? J. Clin. Med. 2023, 12, 2328
34. Tibeica, S.C.; Baciu, E.R.; Lupu, I.C.; Balcos, C.; Luchian, I.; Budala, D.G.; Tibeica, A.; Surlari, Z.; Carausu, E.M. Creating and Validating a Questionnaire for Assessing Dentists' Self-Perception on Oral Healthcare Management—A Pilot Study. Healthcare 2024, 12, 933.
35. Tibeica, S.C.; Virvescu, D.I.; Lupu, I.C.; Budala, D.G.; Luchian, I.; Tibeica, A.; Surlari, Z.; Carausu, E.M. Patients' Satisfaction Regarding Oral Healthcare Services in the North-East Region of Romania: A Preliminary Questionnaire Survey. Healthcare 2024, 12, 1195.

DOI : 10.62610/RJOR.2025.1.17.13