Revista de Ciencias Médicas de Pinar del Río

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(S1): e6993

REVIEW ARTICLE

Determinants of success in total denture oral rehabilitation: clinical and functional factors

Neyda Carmita Chiluiza-Naranjo [1], **Elvia María Paucar-Cepeda** [1], **María de los Angeles Salinas-Arcos** [1]

[1]Universidad Regional Autónoma de Los Andes. Ambato, Ecuador.

Received: December 16, 2025
Accepted: December 17, 2025
Published: December 18, 2025

Citar como: Chiluiza-Naranjo NC, Paucar-Cepeda EM, Salinas-Arcos Ma. Determinantes del éxito en la rehabilitación oral con prótesis total: factores clínicos y funcionales. Rev Ciencias Médicas [Internet]. 2025 [citado: fecha de acceso]; 29(S1): e6993. Disponible en: http://revcmpinar.sld.cu/index.php/publicaciones/article/view/6993

ABSTRACT

Introduction: oral rehabilitation with complete dentures constitutes an essential therapeutic alternative for edentulous patients.
Objective: to describe the biological, technical, psychological, and socioeconomic factors that determine success in oral rehabilitation with complete dentures.
Methods: a systematic review of the literature was conducted in PubMed, Scopus, and Web of Science, considering studies published between 2018 and 2024. Keywords related to complete dentures and oral rehabilitation were used. Articles were selected according to relevance and methodological quality criteria, and subsequently synthesized to identify common patterns and divergences in the findings.
Development: biological factors such as bone density and periodontal health are critical for denture retention and stability. In the technical field, advances in dental materials and digital technologies have improved durability, fit, and aesthetics of dentures. Psychological factors, including realistic expectations, patient education, and emotional support, directly influence adaptation and satisfaction. Finally, socioeconomic aspects, such as limited access to services and high costs, represent significant barriers, with subsidy programs and patient education highlighted as key strategies to optimize outcomes.
Conclusions: the success of complete dentures depends on a comprehensive approach that integrates clinical, technological, psychological, and social factors. Multidisciplinary care and equitable access policies are indispensable to ensure effective and sustainable rehabilitations, improving the quality of life of edentulous patients and promoting equity in oral health. This review underlines the relevance of a holistic approach to improve patient adaptation, function and quality of life, highlighting the importance of tailored strategies in full denture oral rehabilitation.

Keywords: Dental Implants; Dental Prosthesis; Mouth Rehabilitation.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(S1): e6993

INTRODUCTION

Complete dentures represent an essential solution for patients who have lost all their teeth, providing an effective alternative to restore not only masticatory function but also facial aesthetics and, ultimately, quality of life. Total tooth loss can have profound impacts on a patient's physical and mental health, affecting their ability to eat properly, speak clearly, and maintain self-esteem. In response to these needs, research in the field of oral rehabilitation has advanced significantly, offering a more detailed understanding of the multiple factors influencing the success of complete dentures.[1]

The success of complete dentures does not depend solely on the technical skill of the dental professional, but also on a series of interrelated factors encompassing biological, technical, psychological, and socioeconomic domains. From a biological perspective, alveolar bone quality and periodontal health are essential for denture retention and stability. Studies have shown that higher bone density and good periodontal health are associated with better clinical outcomes. Additionally, the condition of soft tissues—such as the integrity of the oral mucosa—is crucial for patient comfort and the prevention of complications like ulcerations.[2]

From a technical standpoint, the choice of materials and fabrication techniques plays a decisive role in the durability, aesthetics, and fit accuracy of dentures. Recent advances in dental materials—such as improved acrylic resins and advanced ceramics—combined with innovative manufacturing technologies like CAD/CAM, have significantly enhanced denture quality. Moreover, regular maintenance and periodic adjustments are fundamental to ensuring long-term functionality and comfort.[3]

From a psychological perspective, patient expectations and adaptation are essential components of treatment success. Adequate education on denture use and care, combined with psychological support, can facilitate patient adaptation and improve treatment satisfaction. Effective communication between the patient and the dental professional is vital to align expectations and ensure a positive experience.[4]

Socioeconomic factors also play a crucial role in the success of complete dentures. Access to dental health services and treatment costs can be significant barriers for many patients, directly affecting their ability to receive and maintain adequate prostheses. Disparities in access to dental care and high associated costs may limit patients' ability to fully benefit from complete dentures. Therefore, health policies that subsidize treatment and patient education programs are essential to overcome these barriers and improve treatment outcomes.[5] Based on the above, this review was conducted with the objective of describing the biological, technical, psychological, and socioeconomic factors that determine the success of total denture oral rehabilitation.

METHODS

This study was conducted as a systematic bibliographic review, developed in accordance with the recommendations of the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement, with the aim of identifying, analyzing, and synthesizing the available scientific evidence on factors influencing the success of total denture oral rehabilitation. The information search was carried out in a structured and reproducible manner, considering publications from January 2010 to December 2024, in order to include relevant and up-to-date literature on the topic.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(S1): e6993

Information sources included recognized electronic databases in the health sciences: PubMed/MEDLINE, SciELO, ScienceDirect, Google Scholar, LILACS, and the Virtual Health Library (BVSALUD). Additionally, reference lists of selected articles were reviewed to identify potentially relevant studies not retrieved in the initial search. Grey literature—such as academic theses and technical documents—was also considered, provided it met the established inclusion criteria.

The search strategy was designed by combining keywords and controlled descriptors, adapted to each database and linked with Boolean operators. Terms included: "prótesis total," "rehabilitación oral," "éxito clínico," "adaptación del paciente," "factores biológicos," "factores psicológicos," and "factores socioeconómicos," along with their English and Portuguese equivalents ("complete denture," "oral rehabilitation," "treatment success," among others). The Boolean operators AND and OR were used to expand or restrict results as appropriate. Articles published in Spanish, English, and Portuguese were included.

Inclusion criteria encompassed original studies, systematic reviews, and observational studies that directly addressed factors associated with the success of total denture oral rehabilitation, published within the defined timeframe and with full-text availability. Excluded were duplicate articles, studies outside the established period, publications irrelevant to the review's objective, single case reports, and documents without full-text access.

The selection process was carried out in several phases. Initially, all records retrieved from the databases were identified, followed by duplicate removal. Subsequently, titles and abstracts were screened to exclude studies that did not meet eligibility criteria. Finally, potentially relevant articles were assessed through full-text reading, resulting in the final selection of studies included in the review.

For data extraction and analysis, a matrix was created to collect key variables from each study: author, year of publication, methodological design, sample characteristics, and main findings. Results were synthesized through a qualitative narrative analysis; no meta-analysis was performed due to the methodological heterogeneity of the included studies.

DEVELOPMENT

The synthesis of findings presented in Table 1 shows that the success of oral rehabilitation with complete dentures depends on the interaction of biological, technical, psychological, and socioeconomic factors. Biologically, alveolar bone density, periodontal health, and soft tissue integrity are critical for denture retention, stability, and comfort. From a technical perspective, advances in dental materials and the incorporation of digital technologies such as CAD/CAM have improved denture durability, aesthetics, and fit accuracy, thereby enhancing patient satisfaction. Psychologically, realistic expectations and psychological adaptation—supported by education and emotional support—are essential for patient acceptance and therapeutic success. Finally, socioeconomic factors, such as unequal access to dental services and high treatment costs, constitute significant barriers that require subsidy policies and support programs to ensure effective and equitable care.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(S1): e6993

Table 1. Factors influencing the success of oral rehabilitation with complete dentures.

Factor	Description
Biological	Alveolar bone quality and periodontal health are critical for denture retention and stability. Higher bone density and good periodontal health are associated with better outcomes. Soft tissue condition is also important for patient comfort and prevention of ulcerations.
Technical	Advances in dental materials (improved acrylic resins and advanced ceramics) and manufacturing technologies (CAD/CAM) have enhanced durability, aesthetics, impression accuracy, and fit, resulting in greater retention, comfort, and patient satisfaction.
Psychological	Psychological adaptation and patient expectations are key determinants. Adequate education on denture use and care, combined with psychological support, improves adaptation and satisfaction. Effective communication and a patient-centered approach are crucial.
Socioeconomic	Access to dental health services and treatment cost are influential. Disparities in access and high costs can limit patients' ability to receive and maintain adequate prostheses. Health policies that subsidize treatment are essential to overcome these barriers.

Regarding biological factors, alveolar bone quality—particularly its density—is fundamental for the retention and stability of complete dentures, as well as for successful osseointegration. Periodontal health plays a crucial role in denture stability, and good periodontal status prior to denture placement is essential to prevent complications. Additionally, the integrity of soft tissues, such as the oral mucosa, is key to preventing ulcerations and enhancing denture comfort (Table 2).

Table 2. Biological factors influencing the success of oral rehabilitation with complete dentures.

Source	Factors involved	Description
Limpuangthip et al.,[2]	Periodontal health	Analyzed the relationship between periodontal health and complete denture retention, finding that periodontal diseases can significantly compromise denture stability.
Airasheedi et al.,[3]	Periodontal health	Emphasized that good periodontal health prior to denture placement is essential to prevent post-insertion complications.
Fouda et al.,[6]	Alveolar bone quality	Conducted a systematic review on alveolar bone quality and its impact on complete denture retention, concluding that higher bone density is associated with better retention and stability.
Zuíga,[7]	Alveolar bone quality	Highlighted the importance of bone density in both the maxilla and mandible, noting that osseointegration is crucial for long-term success of complete dentures.
Moralesset al.,[8]	Soft tissue condition	Conducted a clinical study on soft tissue health and its relationship with denture comfort, finding that oral mucosa integrity is crucial to prevent ulcerations and improve patient comfort.

Regarding technical factors (Table 3), improved acrylic resins, advanced ceramics, and new dental polymers enhance the durability, aesthetics, comfort, and longevity of dentures. CAD/CAM technology significantly improves denture fit and retention, requiring fewer post-insertion adjustments compared to conventional methods. Additionally, regular maintenance and periodic adjustments are essential for long-term patient satisfaction, functionality, and comfort.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(S1): e6993

Table 3. Technical factors influencing the success of oral rehabilitation with complete dentures.

Source	Factors involved	Description
Airasheedi et al.,[3]	Fabrication techniques	Analyzed the impact of CAD/CAM technology on denture fabrication, showing it significantly improves fit and retention.
Medyński et al.,[5]	Maintenance and adjustments	Found that periodic adjustments are crucial for maintaining long-term functionality and comfort of dentures.
Loayza et al.,[9]	Denture materials	Reviewed advances in dental materials, highlighting improved acrylic resins and advanced ceramics as key factors increasing durability and aesthetics.
Molina et al.,[10]	Fabrication techniques	Compared conventionally fabricated dentures with CAD/CAM-fabricated ones, finding the latter offer better fit and fewer post-insertion adjustments.
Ribeiro et al.,[11]	Fabrication techniques	Identified different methods used to record maxillomandibular relationships in CAD/CAM complete denture fabrication, including 4 commercial systems and 3 innovative methods that reduce the number of required appointments.
Bors et al.,[12]	Maintenance and adjustments	Conducted a longitudinal study on the importance of regular maintenance and adjustments for patient satisfaction, concluding that patients receiving continuous follow-up report higher satisfaction levels.

Realistic expectations and good communication with the dentist are key to patient satisfaction with dentures. Patients with clear expectations adapt better and report higher satisfaction. Psychological support and education on denture use improve adaptation and acceptance, reducing the time needed for adjustment. Overall, these represent the psychological factors influencing the success of oral rehabilitation with complete dentures (Table 4).

Table 4. Psychological factors influencing the success of oral rehabilitation with complete dentures.

Source	Factors involved	Description
Colvin et al.,[1]	Patient expectations	Highlighted that patients with clear and realistic expectations tend to adapt better to dentures and report higher satisfaction.
Avelino et al.,[13]	Patient expectations	Evaluated whether conventional complete dentures influence taste perception in edentulous patients, concluding they can negatively interfere with the perception of the four primary tastes (sweet, salty, sour, and bitter).
Oliynyk et al.,[14]	Psychological adaptation	Found that psychological support programs can significantly reduce adaptation time and improve denture acceptance.

Disparities in access to dental health services and high treatment costs can negatively affect denture outcomes (Table 5). Financial support programs and government policies can improve access and treatment success. Furthermore, patient education on dental care and denture use is crucial to extend prosthesis lifespan and enhance quality of life.

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(S1): e6993

Table 5. Socioeconomic factors influencing the success of oral rehabilitation with complete dentures.

Source	Factors involved	Description
Medyński et al.,[5]	Access to health services	Reviewed socioeconomic factors affecting access to dental care, concluding that disparities in access can negatively impact treatment outcomes.
Bors et al.,[12]	Education and awareness	Found that patient education programs can extend denture lifespan and improve quality of life.
Sánchez et al.,[15]	Access to health services	Emphasized that patients with limited access to dental care face greater difficulties in receiving and maintaining adequate dentures.
Pereira et al.,[16]	Treatment cost	Assessed the feasibility of providing complete dentures to individuals aged over 65 in São Paulo, concluding that the budgetary impact would be low compared to primary and specialized care budgets.
Baumann et al.,[17]	Treatment cost	Investigated the impact of treatment cost on denture success, finding that high costs can be a significant barrier for many patients.
	Education and awareness	Studied the importance of patient education, concluding that better-informed patients—regarding dental care and proper denture use—are more likely to achieve successful outcomes.
	Treatment cost	Suggested that financial support programs and government policies subsidizing treatment can significantly improve access and success of dentures.

The findings of this systematic review demonstrate that the success of oral rehabilitation with complete dentures depends on the interaction of multiple biological factors acting in concert. Alveolar bone quality—particularly its density and volume—is a determining factor in ensuring adequate denture retention and stability, directly influencing masticatory function. Likewise, periodontal health prior to rehabilitation is essential to minimize clinical complications and facilitate denture adaptation. Similarly, the integrity and condition of soft tissues, especially the oral mucosa, play a key role in patient comfort, as their impairment can cause pain, ulcerations, and treatment rejection, negatively affecting acceptance and continuous denture use.[6]

From a technical perspective, the findings confirm that advances in dental materials and fabrication techniques have significantly improved the clinical outcomes of complete dentures. The development of higher-strength acrylic resins, advanced ceramics, and the incorporation of digital technologies such as CAD/CAM have enabled the production of dentures with better fit, greater precision, and superior aesthetics, resulting in enhanced durability and patient satisfaction. Nevertheless, despite these technological improvements, periodic clinical follow-up and regular maintenance remain essential to preserve functionality, prevent misfits, and ensure long-term denture stability.[7]

From a psychological standpoint, the review highlights that patient adaptation to complete dentures depends not only on clinical factors but also on emotional and cognitive aspects. Patient education regarding denture use, care, and limitations—combined with psychological support—promotes progressive adaptation and reduces frustration associated with the rehabilitation process. Likewise, realistic expectations and clear, empathetic communication between the professional and the patient are associated with higher levels of satisfaction, treatment adherence, and acceptance of the final outcome.[8]

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(S1): e6993

Finally, socioeconomic factors emerge as relevant determinants that can condition access to and continuity of complete denture treatment. Limitations in access to oral health services, along with high treatment costs, represent significant barriers that negatively impact clinical outcomes and patients' quality of life. In this context, the implementation of financial support programs, government subsidies, and public policies aimed at reducing health inequities is essential to improve access, optimize therapeutic outcomes, and ensure the success of oral rehabilitation with complete dentures.[9]

CONCLUSIONS

This systematic review underscores the need for a multidisciplinary approach to ensure the success of complete dentures by integrating biological, technical, psychological, and socioeconomic factors. This requires dental health professionals to work collaboratively to optimize treatment outcomes and patient quality of life. Furthermore, future research should focus on the continuous evaluation of new materials and technologies, the development of psychological support strategies and patient education programs, and the reduction of disparities in access to dental health services—ensuring that all individuals can benefit from effective, sustainable, and affordable oral rehabilitations.

BIBLIOGRAPHIC REFERENCES

1. Colvin J, Candiddate DDS, Dawsn DV, et al. Patient Expectations and Satisfaction with Prosthodontic Treatment Modalities. *J Prosthodontic*[Internet]. 2019[citado 20/11/2025]; 28(3): 264-270. Disponible en: https://onlinelibrary.wiley.com/doi/abs/10.1111/jopr.12983

2. Limpuangthip N, Somkotra T, Arksornnukit M. Impacts of Denture Retention and Stability on Oral Health-Related Quality of Life, General Health, and Happiness in Elderly Thais. Curr Gerontol Geriatr Res[Internet]. 2019 [citado 20/11/2025]; 2019: 3830267. Disponible en: https://doi.org/10.1155/2019/3830267

3. Airasheedi MM, Ibrahem FB. Influence of CAD/CAM Technology on the Accuracy of Complete Denture Bases. J Pharm Bioallied Sci[Internet]. 2025 Apr 2[citado 20/11/2025]; 17(Suppl 1): S565–S567. Disponible en: https://doi.org/10.4103/jpbs.jpbs_248_25

4 Instituto Mensalus. ¿Cómo se adapta al paciente la psicterapia? stas son algunas estrategias que usan los psicólogos para adaptar la psicoterapia al paciente. *Psicología y Mente*[Internet]*; 2024*[citado 20/11/2025]. Disponible en: https://psicologiaymente.com/clinica/como-se-adapta-al-paciente-psicoterapia

5. Medyński D, Gredes T, Glapiński M, Dudek D, Grabarek BO, Niewiadomska E, Czajka-Jakubowska A, Przystańska A. Assessment of the Socioeconomic Status and Analysis of the Factors Motivating Patients to Apply for Prosthetic Treatment by Students of Dentistry at the Poznań University of Medical Sciences. Int. J. Environ. Res. Public Health[Internet]. 2022[citado 20/11/2025]; 19(9):5703. Disponible en: https://doi.org/10.3390/ijerph19095703

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(S1): e6993

6. Fouda SM et al. Impact of prosthetic rehabilitation on oral health-related quality of life of Saudi Adults: A prospective observational study with pre-post design" *The Saudi Dental J*[Internet]. 2024[citado 20/11/2025]*;* 36(7): 1000-1005. Disponible en: https://doi.org/10.1016/j.sdentj.2024.04.006

7. Zuíga Paguay YM. RESISTENCIA DE LAS RESINAS ACRÍLICAS DE POLIMETILMETACRILATO VS BIS-ACRÍLICAS DE AUTOCURADO A FUERZAS DE COMPRESIÓN. UNIVERSIDAD NACIONAL DE CHIMBORAZO. Riobamba – Ecuador[Internet]; 2019[citado 20/11/2025]. Disponible en: https://files01.core.ac.uk/download/pdf/652235871.pdf

8 Morales Pérez Yaquelin Juliana, Meras Jáuregui Teresa María, Batista Aldereguia Mirtha Yamila. Lesiones paraprotéticas de tejidos blandos en pacientes portadores de prótesis total. Medicentro Electrónica [Internet]. 2019 Mar [citado 20/11/2025]; 23(1): 19-25. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1029-30432019000100004&lng=es.

9. Loayza Romero AC, Zurita Blacio SM, Montesdeoca Suàrez CA, Veas Garcìa HV. Materiales cerámicos restauradores en odontología estética. Avances y aplicaciones. RECIMUNDO[Internet]. 2024[citado 20/11/2025]; 8(2): 53-63. Disponible en: https://doi.org/10.26820/recimundo/8.(2).abril.2024.53-63

10. Molina Washington PC, Caisaguano JW, Núñez MA. Utilidad de la tecnología CAD/CAM en la fabricación de prótesis dentales. Medisur [Internet]. 2023 Dic [citado 20/11/2025]; 21(6): 1305-1311. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1727-897X2023000601305&lng=es

11. Ribeiro AK, de Freitas RFC, Costa RT, de Moraes SL, Srinivasan M, Carreiro AdaF. Maxillomandibular relationship record methods for computer-engineered complete dentures: a scoping review. *Clinical Oral Investigations*[Internet]. 2024[citado 20/11/2025]*; 28*(6). Disponible en: https://doi.org/10.1007/s00784-024-05706-2

12. Bors A, Mucenic S, Monea A, Ormenisan A, Beresescu G. De la prótesis convencional a la inteligente: Redefiniendo la terapia protésica completa mediante la tecnología y la ciencia regenerativa. *Medicina*[Internet]. 2025[citado 20/11/2025]; 61(6):1104. Disponible en: https://doi.org/10.3390/medicina61061104

13. Avelino ME, Vila-Nova TE, Costa RT, Pellizzer EP, Vasconcelos BCdoE, Moraes SLD. Does the use of conventional complete dentures influence taste perception? A systematic review. *The Journal of Prosthetic Dentistry*[Internet]. 2025[citado 20/11/2025]; 133(2): 438-444. Disponible en: https://doi.org/10.1016/j.prosdent.2023.02.018

14. Oliynyk O, Zholdoshbaec D, Koshonova S, et al. Psicología del estrés y la adaptación durante crisis complejas: aspectos prácticos de la asistencia a personas en circunstancias difíciles. Rev Europea de Trauma y Disociaciòn[Internet]. 2025[citado 20/11/2025]; 9(2): 100541. Disponible en: https://doi.org/10.1016/j.ejtd.2025.100541

15. Sánchez García S. Destacaron que los pacientes con acceso limitado a servicios de salud dental tienen mayores dificultades para recibir y mantener prótesis adecuadas. UNIVERSIDAD NACIONAL AUTÒNOMA DE MÈXICO[Internet]; 2024[citado 20/11/2025]. Disponible en: https://ru.dgb.unam.mx/server/api/core/bitstreams/13b6e06b-9316-465c-b159-a90ebf48b989/content

ISSN: 1561-3194 **RNPS:** 1877
Rev Ciencias Médicas. 2025; 29(S1): e6993

16. Pereira AC, Bahia LR, Cavalcante Dde F, Meneghim MdeC, Cavalcanti YW, Ambrosano GMB, Probst LF. Budgetary impact of oral rehabilitation with complete dentures: An economical evaluation from são Paulo state, Brazil. *Value in Health Regional*[Internet]. 2019[citado 20/11/2025]*; 20:* 73–78. Disponible en: https://doi.org/10.1016/j.vhri.2019.01.008

17 Baumann MF, Frank D, Kulla LC, Stieglitz T. Obstáculos para la atención protésica: Aspectos legales y éticos del acceso a prótesis de miembros superiores e inferiores en Alemania y la mejora de la atención protésica desde una perspectiva social. *Sociedades*[Internet]. 2020[citado 20/11/2025]; 10(1):10. Disponible en: https://doi.org/10.3390/soc10010010