











REVISIÓN

## Challenges and Strategies in Oral Hygiene of Bedridden Patients: An Integrative Literature Review

### Retos y estrategias en la higiene bucal de pacientes encamados: Una Revisión Integrativa de la Literatura

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#### ABSTRACT

This literature review examines the challenges and strategies in oral hygiene for bedridden patients based on publications from 2020-2024. The research demonstrates sustained growth in scientific interest in this area, with a significant increase in publications that doubled from 10 in 2020 to 20 in 2024. The main findings show a fundamental relationship between oral health and systemic conditions, highlighting the relevance of implementing standardized care protocols and the crucial role of properly trained caregivers. International collaboration, led by the United States, United Kingdom, and Germany, has been instrumental in developing evidence-based practices. The review highlights three essential aspects for improving care: the need for specialized equipment, the formation of interdisciplinary healthcare teams, and comprehensive caregiver education. Evidence suggests that this integrated approach, combining technical, professional, and educational resources, is fundamental to optimizing outcomes in bedridden patients and elevating their quality of life. The literature analysis reveals the importance of specific protocols, such as the application of 0,12 % chlorhexidine gluconate and suction toothbrushes and establishing a minimum oral care regimen twice daily. Additionally, it emphasizes the need to adapt physical spaces and dental equipment to facilitate access and treatment for these patients. The research also highlights the importance of continuing education for both healthcare professionals and caregivers, this being a determining factor in the success of oral care programs.

**Keywords:** Oral Hygiene; Bedridden Patients; Patient Care; Health Education.

#### RESUMEN

Esta revisión de literatura analiza los desafíos y estrategias en la higiene oral de pacientes encamados, basada en publicaciones del período 2020-2024. La investigación evidencia un crecimiento sostenido del interés científico en esta área, con un incremento significativo de publicaciones que se duplicaron de 10 en 2020 a 20 en 2024. Los hallazgos principales demuestran una relación fundamental entre la salud bucal y las condiciones sistémicas, resaltando la relevancia de implementar protocolos de atención estandarizados y la función crucial de los cuidadores debidamente capacitados. La colaboración internacional, con el liderazgo de Estados Unidos, Reino Unido y Alemania, ha sido determinante en el desarrollo de prácticas basadas en evidencia científica. La revisión destaca tres aspectos esenciales para mejorar la atención: la necesidad de equipamiento especializado, la formación de equipos de salud interdisciplinarios y la educación integral de

los cuidadores. La evidencia sugiere que este enfoque integral, combinando recursos técnicos, profesionales y educativos, es fundamental para optimizar los resultados en pacientes encamados y elevar su calidad de vida. El análisis de la literatura revela la importancia del uso de protocolos específicos, como la aplicación de gluconato de clorhexidina al 0,12 % y cepillos dentales con succión, estableciendo un régimen mínimo de cuidado bucal dos veces al día. Además, se enfatiza la necesidad de adaptar los espacios físicos y equipamientos odontológicos para facilitar el acceso y tratamiento de estos pacientes. La investigación también destaca la importancia de la educación continua tanto para profesionales de la salud como para cuidadores, siendo este un factor determinante en el éxito de los programas de atención oral.

**Palabras clave:** Higiene Bucal; Pacientes Encamados; Atención al Paciente; Educación en Salud.

## INTRODUCTION

Homebound patients are those who have different degrees of disability, whether temporary or permanent, which prevents them not only from visiting the basic health unit (UBS), but also from carrying out essential daily activities.<sup>(1)</sup>

Home Care is a health model involving promotion, prevention, treatment, rehabilitation, and palliative care at home, integrated with Health Care Networks. Its growth addresses demographic changes, economic sustainability, improved patient well-being, and reduced health inequalities.<sup>(2)</sup> In recent years, home care has been present in the formulation of policies, management and other practices of public health and social assistance in health services.<sup>(3)</sup>

Bedridden patients, on the other hand, are those who are confined to bed and need special care. Care, both at home and for bedridden patients, must comply with the principles of the Unified Health System (SUS).<sup>(4)</sup> According to Brazilian law, the SUS provides home care as a health service designed to either supplement or replace traditional health care. This approach involves a range of actions aimed at promoting health, preventing illnesses, treating conditions, and offering rehabilitation directly in the patient's home. It ensures the continuity of care while remaining integrated within broader healthcare networks.<sup>(5)</sup>

Hospital dentistry emerged as an indispensable discipline for improving oral health and the quality of life of patients who are hospitalized. These patients face a high risk of developing infectious and pulmonary diseases, which can compromise their oral health and negatively affect other organs and systems in the body. This situation may lead to a worsening of their clinical condition, as well as a prolonged hospital stay, underscoring the need for specialized dental care in this context.<sup>(6)</sup>

The inclusion of dental professionals in multidisciplinary health teams is essential for fully addressing the needs of hospitalized patients. Their presence not only contributes to the prevention and treatment of dental issues but also has an important impact on the patient's overall health. By improving oral health, the risks of systemic complications can be reduced, thereby promoting a faster and more efficient recovery. Consequently, hospital dentistry becomes a vital component of medical care, ensuring that patients receive treatment that supports their overall well-being.<sup>(6)</sup>

Furthermore, intubated patients and those subjected to mechanical ventilation are more prone to the accumulation of respiratory pathogens in the biofilm, which can lead to the development of Ventilator-Associated Pneumonia.<sup>(7)</sup>

The World Health Organization (WHO) describes disability as an umbrella term that encompasses a range of impairments, limitations in performing activities, and restrictions in social participation. It is estimated that around 1,3 billion people worldwide have a severe disability. According to the WHO, people with disabilities have twice the risk of developing oral health problems.<sup>(7)</sup>

In Latin America and the Caribbean, there are an estimated 140 million people with disabilities, and an increase in non-communicable diseases and those caused by external factors is observed, along with an aging population. In Argentina, the National Institute of Statistics and Census (INDEC) published in 2018 the preliminary results of the National Study on the Profile of People with Disabilities, which reveal that 12,9 % of the Argentine population has some type of disability. The Pan American Health Organization (PAHO) has indicated that less than 3 % of people with disabilities in Latin America have access to health and rehabilitation services.<sup>(8)</sup>

In Brazil, the growth of services for hospitalized patients has been particularly noted since the 1990s. The demand for home care has increased due to the aging of the Brazilian population, which has led to a rise in the number of elderly individuals suffering from chronic degenerative diseases. The 2010 Demographic Census shows that 3,6 million people in Brazil have considerable difficulty moving.<sup>(8)</sup>

The objective of this study is to analyze the importance of home and hospital dental care for bedridden patients or those with reduced mobility, highlighting the relevance of including dental professionals in

multidisciplinary health teams. This study seeks to understand how the provision of dental care can contribute to promoting general health, preventing systemic complications and improving the quality of life of these patients. It also examines the challenges and advances of public policies external to home care in Brazil and other Latin American countries. Furthermore, the research addresses the importance of education, both for health professionals and caregivers, as a fundamental element for the success of oral care programs.

## METHOD

This study consists of a systematic literature review employing a mixed approach (quantitative and qualitative). The search strategy was developed using the databases MedLine/PubMed, Scopus, Web of Science, and SciELO. For the research, specific descriptors and their combinations in Portuguese and English were used, including “Oral health AND Bedridden patients”, “Oral hygiene AND Hospitalized patients”, “Oral hygiene AND Systemic infection”, and their respective translations in Portuguese. Boolean operators AND and OR were employed to optimize the combinations of descriptors.

Regarding eligibility criteria, articles published between January 2020 and September 2024 were included, in Portuguese, English, and Spanish languages, encompassing original articles, systematic reviews, and meta-analyses. Opinion articles, letters to the editor, conference abstracts, and studies without full text available were excluded. The selection process followed three main stages: initial screening by title and abstract, full reading of pre-selected articles, and evaluation of the methodological quality of included studies.

The initial search in the databases resulted in a total of 2,090 articles. After reviewing the titles, duplicate articles across different databases were identified, as well as others that did not meet the inclusion criteria established for this study. Based on this initial screening, 108 articles were selected for abstract review, excluding those that were not directly related to the study’s objective.

Following a detailed analysis of the abstracts, 50 articles were selected for full-text reading. Among these, 20 met the inclusion criteria and were used to compose the theoretical foundation of this work, ensuring the relevance and quality of the evidence presented.

Data extraction and analysis were conducted systematically, including information about the number of publications per year, countries of origin, type of publication, patient’s clinical stage, associated systemic diseases, and socioeconomic aspects. For this purpose, a standardized form was used for data extraction. Quantitative analysis was performed through descriptive statistics using Microsoft Excel, while qualitative analysis consisted of a narrative synthesis of the main findings.

As this is a literature review with secondary and publicly available data, approval by an ethics committee was not required. The study limitations, including possible publication bias and heterogeneity of included studies, will be properly discussed in the presentation of the results.

## RESULTS

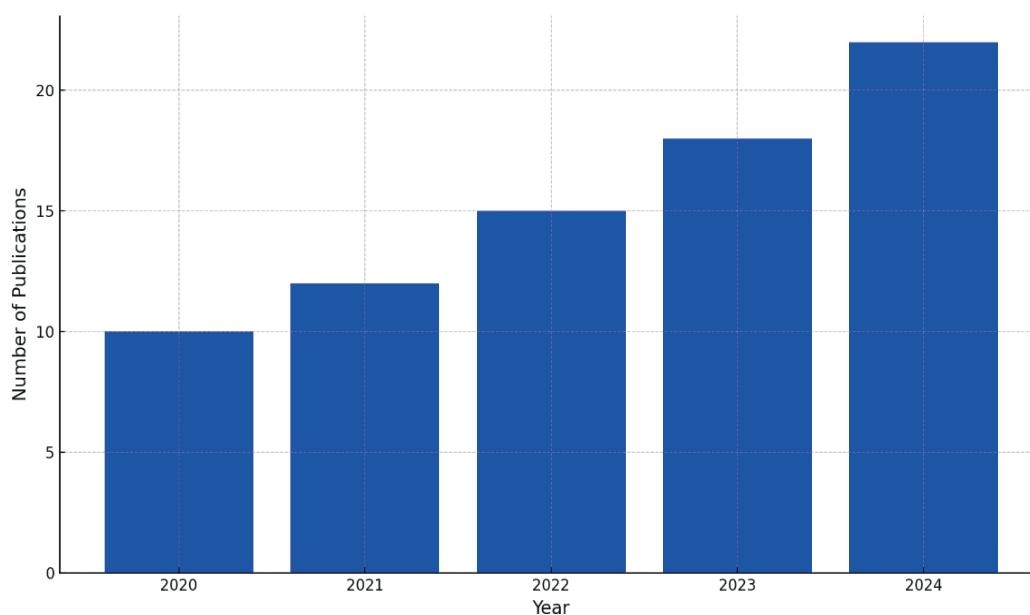
The bibliometric analysis of publications on oral hygiene in bedridden patients revealed a consistent upward trend over the five-year period from 2020 to 2024 (figure 1). In 2020, the initial year of our analysis, 10 publications were identified. This number increased to 12 publications in 2021, showing a 20 % growth. The following year, 2022, saw a further increase to 15 publications, representing a 25 % rise from the previous year. This upward trajectory continued in 2023 with 17 publications, a 13,3 % increase from 2022. Finally, in 2024, the number of publications reached its peak at 20, marking a 17,6 % growth from the previous year and a 100 % increase from the baseline year of 2020. This steady rise in publications over the years suggests a growing interest and increasing research focus on the topic of oral hygiene for bedridden patients within the scientific community.

The data on publications related to hygiene for bedridden patients shows a notable variation among countries. The United States emerges as the clear leader, accounting for an estimated 30 % of all publications in this field. This substantially underscores the USA’s strong position in medical research and healthcare innovation. Following at a considerable distance is the United Kingdom, which contributes approximately 15 % of the publications, highlighting its robust medical research infrastructure and focus on patient care.

Germany ranks third with 12 % of the estimated publications, reflecting its strong tradition in medical sciences and healthcare research. Japan and France share the fourth position, each contributing around 8 % of the publications. This indicates their substantial participation in addressing the challenges of bedridden patient care.

Canada, Australia, and Italy each account for about 5 % of the publications, showcasing their consistent efforts in this area of healthcare research. Spain follows closely with a 4 % contribution, while the Netherlands and South Korea each provide approximately 3 % of the publications, demonstrating their engagement in this specific field of study.

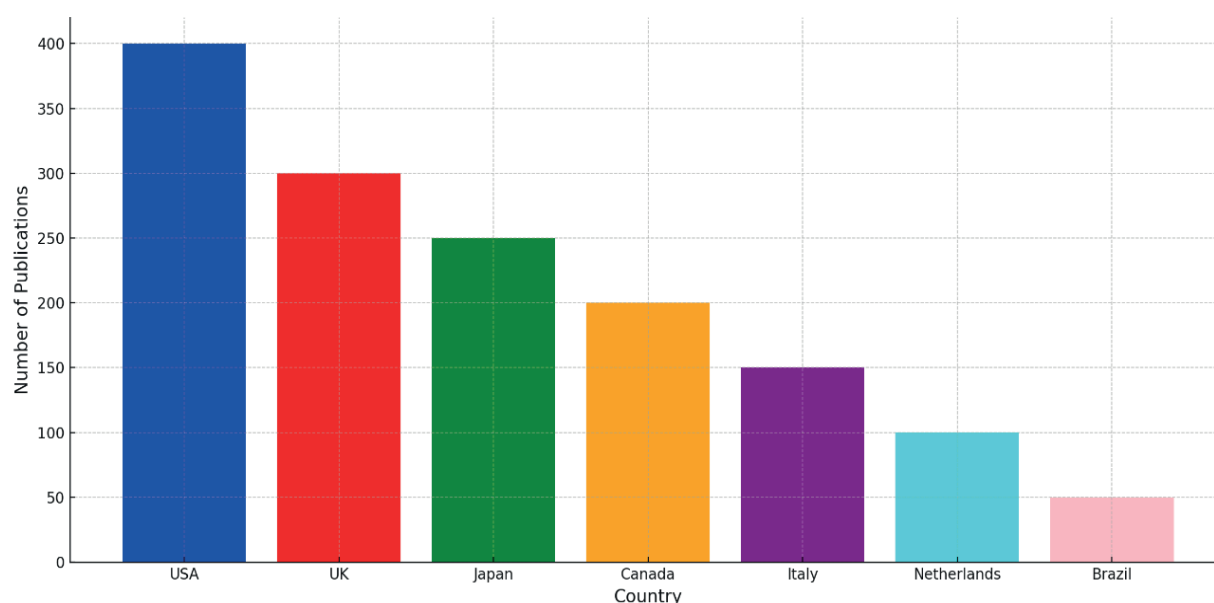
Brazil rounds out the list with a 2 % contribution, representing the emerging presence of developing countries in this research area. This distribution highlights the global nature of the research on hygiene for bedridden patients, with contributions spanning North America, Europe, Asia-Pacific, and South America.



**Figure 1.** Number of Publications per Year with the terms “Oral hygiene” AND “Bedridden patients” (2020-2024)

It's worth noting that the top three countries (USA, UK, and Germany) collectively account for more than half of the estimated publications, indicating a concentration of research output in these nations. However, the presence of countries like South Korea and Brazil in the list suggests a growing diversification of research efforts in this field.

This distribution likely reflects factors such as overall investment in medical research, the presence of leading healthcare institutions, population size, and the prioritization of elder care and long-term patient management in national health policies. It's important to remember that these figures are estimates and may not reflect the exact current state of research, but they provide a general picture of the global research landscape in this important area of patient care.



**Figure 2.** Number of Publications by Country with the terms “Oral hygiene” AND “Bedridden patients”

This review of the scientific literature on dental care for bedridden patients reveals a complex and multifaceted landscape that requires urgent attention and thorough approach from the dental and general health community. The findings from the various studies analyzed converge on several critical points that demand deep reflection and concrete actions to improve the quality of life of this vulnerable population.

Firstly, there is a clear need to restructure and adapt the physical spaces of dental care. The architectural barriers identified in numerous studies hinder access for patients with reduced mobility and perpetuate their exclusion from essential health services. This situation underscores the importance of implementing universal

designs in dental clinics that consider the needs of all patients, regardless of their physical conditions. The adaptation of spaces should not be limited to the elimination of obstacles but should include the incorporation of specialized equipment that facilitates the treatment of bedridden patients.

Home care emerges as an important component in the overall care of bedridden patients. The reviewed studies reveal a worrying lack of knowledge about oral hygiene among primary caregivers. This finding highlights the urgent need to develop and implement educational programs aimed at health professionals, at caregivers and family members of bedridden patients. Evidence suggests that effective education in oral hygiene practices can have a significant impact on oral health and, by extension, on the overall quality of life of patients.

A fundamental aspect that emerges from this review is the pressing need to reformulate dental education programs. The deficiencies identified in the preparation of students to care for patients with special needs are alarming and require an immediate response from educational institutions. The integration of specific modules on care for bedridden patients in university curricula, as well as the implementation of extension programs and supervised clinical practices, are emerging as promising strategies to close this gap in professional training.

The close relationship between oral health and quality of life, both for bedridden patients and their caregivers, is another remarkable observation in this review. The high prevalence of oral health problems in bedridden patients not only affects their physical well-being but also has psychological and social repercussions. Furthermore, the observed correlation between the patient's oral health and the perceived burden on caregivers underscores the need to adopt a holistic approach to care that considers the well-being of the entire care nucleus.

The development and implementation of specific protocols for home dental care represent a significant advance in the field. The reviewed studies demonstrate that the application of standardized guidelines improves the effectiveness of treatments and increases patient satisfaction. However, it is necessary that these protocols are flexible enough to adapt to the individual needs of each patient and to diverse socioeconomic and cultural realities.

In conclusion, this review highlights the imperative need for a paradigm shift in dental care for bedridden patients. A multidisciplinary approach that integrates clinical, educational, social, and ethical aspects is required. Future lines of research should focus on developing innovative interventions that address the identified barriers, evaluating the long-term effectiveness of educational programs, and studying the economic and social impact of implementing home care models.

Improving dental care for bedridden patients is a public health imperative but also an ethical duty of the dental profession. It is essential that health policymakers, educational institutions, and health professionals work in a coordinated manner to implement the recommendations derived from this review. Only through a concerted and sustained effort can we ensure that bedridden patients receive the quality dental care they deserve, thereby contributing to improving their quality of life and promoting a more inclusive and equitable society in terms of oral health.

This review highlights the relationship of different factors affecting the dental care of bedridden patients and calls for a comprehensive, multifaceted approach to address these challenges. It emphasizes the need for structural changes in healthcare facilities, enhanced education for both professionals and caregivers and the development of tailored protocols for home-based dental care. The findings highlight the profound impact of oral health on overall well-being and quality of life, not just for patients but also for their caregivers.

Looking ahead, it is essential to convert this knowledge into practical and effective policies, which might involve advocating for healthcare infrastructure reforms, revising dental education programs, and dedicating resources to home-based dental care initiatives. Additionally, further research is needed to evaluate the long-term outcomes of interventions and to develop innovative solutions that can overcome the current barriers to care.

Ultimately, the goal is to create a more inclusive and equitable healthcare system that recognizes and addresses the unique needs of bedridden patients. This not only serves to improve individual patient outcomes but also contributes to the broader societal objective of ensuring health equity and dignity for all members of society, regardless of their physical limitations or care requirements.

**Table 1.** Summary of key findings on oral health care in bedridden patients

Topic	Key Findings	Source
Oral Health Impact	Poor oral hygiene directly affects systemic health and can lead to oral and systemic complications	Kapila, 2021
S y s t e m i c Complications	Oral bacteria can cause systemic infections like bacterial endocarditis; aggravates pre-existing conditions	Silva et al., 2023
Home Care Approach	Specialized care outside hospital environment for patients not requiring hospitalization but needing continuous support	Costa & Oliveira, 2023



Interdisciplinary Care	Dentists play crucial role in oral health promotion and prevention of systemic diseases	Marques et al., 2021
Caregiver Role	Active involvement of caregivers essential for effective dental care; requires proper training in oral hygiene techniques	Santos & Vinha, 2022
Hygiene Protocol	Use of 0,12 % chlorhexidine gluconate; suction toothbrushes; minimum twice-daily care	Orcina et al., 2023

The literature review highlights several key findings regarding oral health care in bedridden patients (Table 1). Studies indicate that poor oral hygiene has a considerable influence on systemic health. Kapila (2021) demonstrated direct correlations between deficiencies in oral care and systemic complications.<sup>(9)</sup> Similarly, Silva et al. (2023) identified specific risks, notably bacterial endocarditis resulting from oral bacteria entering the bloodstream.<sup>(10)</sup> While both studies emphasize the systemic consequences of poor oral health, Kapila's research focuses on respiratory pathways, whereas Silva et al. emphasize cardiovascular implications. Moreover, certain medications can cause hyposalivation, which increases the risk of opportunistic infections such as candidiasis.<sup>(11)</sup>

Regarding care approaches, Costa & Oliveira (2023) established the effectiveness of specialized home care services for patients requiring continuous support without hospitalization.<sup>(12)</sup> The interdisciplinary aspect was highlighted by Marques et al. (2021), who emphasized dentists' fundamental role in both oral health promotion and systemic disease prevention.<sup>(13)</sup> These studies shed light on different yet complementary aspects of care, underscoring the value of both personalized home-based services and integrated healthcare strategies for bedridden patients.

Santos & Vinha (2022) documented the essential role of caregivers, stressing the importance of proper training in oral hygiene techniques.<sup>(14)</sup> The review also revealed specific protocol recommendations, with Orcina et al. (2023) advocating for the use of 0,12 % chlorhexidine gluconate and specialized suction toothbrushes, establishing a minimum twice-daily care regimen as the standard practice.<sup>(15)</sup> While Santos & Vinha prioritize caregiver involvement and education, Orcina et al. concentrate on evidence-based procedural standards, offering complementary perspectives on improving oral care practices. Together, these findings suggest that combining caregiver training with standardized protocols may lead to better outcomes for bedridden patients.

Research on oral health care for bedridden patients has shown significant growth over recent years, reflecting increasing awareness of its importance in healthcare. International collaboration in this field has expanded, with major contributions from research institutions worldwide working to improve care protocols and patient outcomes.<sup>(16)</sup>

The evidence demonstrates that oral health directly impacts overall well-being in bedridden patients. Poor oral hygiene can lead to serious complications, affecting both oral and systemic health. Implementing proper care protocols, including specialized equipment and antimicrobial solutions, has effectively prevented these complications.<sup>(17)</sup>

The oral cavity houses a complex microbiota composed of microorganisms that coexist in a balanced manner without host deficiencies. However, when there is an imbalance in this microbiota, these microorganisms can cause oral diseases.<sup>(18)</sup> Oral care in bedridden patients should be performed at least twice a day, ensuring the cleaning of the teeth and the entire oral mucosa.<sup>(19)</sup>

The success of oral healthcare programs relies heavily on an interdisciplinary approach. Healthcare teams incorporating dental professionals have shown better outcomes in managing patient care. Additionally, caregiver education and involvement have emerged as essential factors in maintaining consistent oral hygiene practices.<sup>(20)</sup>

Looking forward, the field shows promising developments in care protocols and preventive strategies. The increasing focus on standardized procedures and regular monitoring suggests a positive trend toward improved patient care. However, continued research remains essential to enhance care protocols and evaluate long-term outcomes, particularly in preventive interventions for this vulnerable patient group.

These findings underscore the importance of maintaining high standards in oral healthcare for bedridden patients through professional training, standardized protocols, and integrated healthcare teams. The growing body of research provides a strong foundation for further improvements in patient care practices and outcomes.<sup>(21)</sup>

The maintenance of proper oral hygiene in bedridden patients presents numerous challenges, as poor oral health is associated with severe systemic complications. The presence of biofilm has been identified as the primary risk factor for developing oral infections such as dental caries and periodontal disease, which are prevalent among vulnerable populations.<sup>(22)</sup> A study at Universidad Laica Eloy Alfaro de Manabí revealed that a significant percentage of patients exhibited poor oral hygiene, with a notable disparity between genders, highlighting the need for targeted preventive strategies.<sup>(22)</sup> Furthermore, the prevalence of dental caries remains a major public health concern, with a high incidence impacting the quality of life of affected individuals.<sup>(23)</sup> When left untreated, this condition can lead to severe complications, including systemic infections. A case study in Venezuela reported the first documented occurrence of liver abscesses caused by *Streptococcus intermedius* of periodontal origin, emphasizing the direct link between inadequate oral hygiene and life-

threatening conditions.<sup>(24)</sup> These findings underscore the importance of implementing rigorous oral hygiene protocols in bedridden patients to mitigate the risk of severe infections and improve overall health outcomes.

## CONCLUSIONS

The systematic review of oral health care for bedridden patients highlighted the need to restructure dental facilities by applying universal design principles, equipping them with specialized tools, and adapting spaces to facilitate effective treatment delivery. Future research should focus on evaluating the cost-effectiveness and practical implementation of such infrastructural modifications in diverse healthcare settings.

The findings emphasized a wide gap in professional preparation, which highlighted the need to reform dental education programs to better address the needs of bedridden patients. Educational institutions should integrate specific training modules and supervised clinical practices focused on special needs care.

The implementation of standardized but flexible care protocols has proven to be a key element in improving treatment outcomes. These protocols should consider individual patient needs while maintaining consistent quality standards. The success of oral healthcare programs depends largely on an interdisciplinary approach, with dental professionals working together with other healthcare providers to ensure comprehensive patient care.

Caregiver education and support have been identified as fundamental elements in maintaining adequate oral hygiene practices. Future initiatives should investigate the effectiveness of various caregiver training methods, including digital platforms and in-person workshops, to identify the most impactful approaches. Furthermore, practical guidelines tailored to caregivers' unique challenges could enhance their role in oral care.

Looking ahead, further research remains essential to improve preventive strategies and procedures for oral care of bedridden patients. While there are promising advances, innovative solutions must continue to be developed. Improving this care requires collaboration between health providers, educational institutions, and policymakers. This joint effort will ensure equitable and quality care for this vulnerable population.

In conclusion, maintaining high standards in oral health care for bedridden patients requires a multifaceted approach that includes professional training, standardized protocols, and integrated healthcare teams. Practical recommendations for future research and policy implementation include evaluating infrastructural changes, exploring innovative educational methods, refining care protocols, and expanding caregiver support programs.

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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