



RESEARCH ARTICLE

Complete Edentulism & Positive Aging

Fernández E¹, Parraguez S², Sarabia A³, Guzmán JP⁴, Padilla P⁵.

¹ Cirujano Dentista. D.D.S. Especialista en Rehabilitación Oral. Profesor Asociado. Docente Clínica Integrada del Adulto II. y Postgrado de Rehabilitación Oral, Universidad San Sebastián. Santiago de Chile. ORCID: 0000-0003-2257-8877

² Cirujano Dentista. D.D.S. CESFAM Dr. Atilio Almagiá Pereira. I. Municipalidad de Los Ángeles, Octava Región, Chile. ORCID: 0009-0002-0818-2235

³ Cirujano Dentista. D.D.S. MBA, Universidad del Alba, Santiago de Chile. ORCID: 0000-0003-0517-650X

⁴ Cirujano Dentista. D.D.S. Especialista en Rehabilitación Oral. Profesor Asistente. Docente Clínica Integrada del Adulto II. y Postgrado de Rehabilitación Oral, Universidad San Sebastián. Santiago de Chile. ORCID: 0009-0008-1175-631X.

⁵ Cirujano Dentista. D.D.S. Especialista en Rehabilitación Oral. Profesora Asistente. Docente Clínica Integrada del Adulto I. Universidad San Sebastián. Santiago de Chile. ORCID 0000-0002-8241-8368



PUBLISHED
31 July 2024

CITATION
Fernández, E., Parraguez, S., et al., 2024. Complete Edentulism & Positive Aging. Medical Research Archives, [online] 12(7). <https://doi.org/10.18103/mra.v12i7.5529>

COPYRIGHT
© 2024 European Society of Medicine. This is an open- access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

DOI
<https://doi.org/10.18103/mra.v12i7.5529>

ISSN
2375-1924

ABSTRACT

Objective: The purpose of this article is to challenge two concepts widely disseminated and accepted in the Chilean dental field: first, that all people who wear complete prosthetic devices, particularly complete maxillary dentures are older people; and second, that among those patients who wear them it is recommended to remove them at night, as a protective mechanism for their oral and/or systemic health.

Methods: A review of the existing Chilean and international evidence on the nocturnal removal of complete maxillary dentures to assess whether it can be considered a recommendation of universal scope was conducted.

Results: Although there is evidence supporting nocturnal removal of complete maxillary dentures, the quality of such evidence is low or very low according to the GRADE criteria, generating well-founded doubts about the validity of the overall nature of such recommendation.

Conclusion: The authors propose that education of denture wearers should focus on the hygiene of the oral mucosa and the prosthetic device, respecting the autonomy of the person in the final decision of removing or not their complete maxillary dentures during the night and that this recommendation should not be made indiscriminately for all those who wear them, thus considering the biopsychosocial context of each patient.

Keywords: Dental prosthesis, complete dentures, dental prosthesis care, removal of dental prosthesis, stomatitis.

"However unwillingly a person who has a strong opinion may admit the possibility that his opinion may be false, he ought to be moved by the consideration that, however true it may be, if it is not fully, frequently, and fearlessly discussed, it will be held as a dead dogma, not a living truth."

John Stuart Mill

Introduction

Following the publication of a paper on “ageism” in dental students of a Chilean university⁸, two aspects attracted the attention of the authors, especially due to the high frequency noticed among the students' responses: first, the recommendation that patients who wear complete maxillary dentures (CMDs) should always remove them at night for the sake of oral health; and second, that the group of CMD-wearers consists exclusively of old or very old population. These ideas are opposed to what the researchers have experienced in terms of practice and background knowledge, both in clinical and teaching settings. Furthermore, in the case of Chile, there is a high percentage of the population who use CMDs, with the condition of toothlessness being an unfortunate public health issue in this country⁵. Therefore, it was considered appropriate to conduct a review of the relevant literature focused on both aspects, in-order to evaluate local and global epidemiological contexts, as well as Chilean and international recommendations on the wearing and cleaning of CMDs, with special emphasis on nocturnal removal of prosthetic devices.

Methods

In order to focus our analysis on what was stipulated, two searches were conducted in the MEDLINE database using MeSH descriptors and through relevant and updated bibliographic references. The first search was performed using the keywords “dental prosthesis” OR “dentures” AND “nocturnal wearing” AND “nocturnal removal”. In the second search, the combined terms “nocturnal wear of prostheses” AND “nocturnal removal of prostheses” were used. Inclusion criteria for this study were: (a) year of publication between 2000 and 2023 (a wide time frame is established for the publications in order to obtain a large amount of information to analyze); (b) randomized clinical trials, critical reviews, or systematic reviews that address the wear or removal of CMDs during the night; and (c) both the abstract and article had to be available online in Spanish or English. In addition, other documents taken into account were guidelines issued by international associations^{2, 7}; Chilean guidelines provided by the government; guidelines and recommendations of the Ministry of Health (MINSAL, for its acronym in Spanish)^{5,16,17}; and guidance documents issued by Chilean universities^{4,9}. The authors did not conduct a statistical analysis of the results of the selected articles, since the final objective was more related to the assessment and reflection on the “current consensus” regarding the issues already raised and not to the performance of a systematic review or meta-analysis.

Results

The analysis of the aforementioned documents allows us to present elements that we consider relevant and on which we will reflect on below.

EPIDEMIOLOGY OF COMPLETE EDENTULISM

The thought that the condition of complete edentulism (a term not acknowledged by the Royal Spanish Academy (RAE), but which has been recognized by the PAHO) occurs exclusively among older age groups hides the reality of a large number of youth and young adults worldwide who suffer from total tooth loss^{19,31} (World Health Organization, 2022). The WHO has reported an

estimated global average prevalence of complete edentulism of almost 7% among people aged 20 years and older, with a total of 350 million cases worldwide³¹. For individuals aged 60 years and older, the estimated global prevalence reaches 23%³¹.

In the case of Chile, data shown by the Chilean National Health Survey, 2016-2017¹⁹ indicated that only 68% of people in the 15-24 age group is fully dentate. In the 35-44 age group this value decreases to 31%, with some cases of total edentulism already observed. Among older people the situation was even more unfavorable, finding that only 2.6% was fully dentate in the 65-74 age group, with 17.6% of individuals presenting complete edentulism. With respect to prosthetic devices, the same study indicated that 0.2% of people aged 15-24 years wore removable dentures; in the 35-44 age group this value reached 10.9%, and 58.6% in people aged 65-74 years. Educational attainment or years of schooling are also relevant for tooth loss; it can be noted that the lower the educational level, the higher the chance of wearing dentures and the greater the tooth loss. Finally, it was found that prosthetic devices are more commonly worn among people from rural areas as compared to those in urban areas¹⁹. According to the projections of the National Institute of Statistics (INE) for 2022¹⁹, in addition to data contained in the executive summary of the MINSAL 47 GRADE guidelines²⁰, it is concluded that by the year 2022 the prevalence of edentulism in our country in the cohort of 35-64 years of age would reach 8% (equivalent to 1,596,871 edentulous people) and 17.6% (equivalent to 3,513,116 people) in the cohort of 65-74 years of age. Thus, it is confirmed that completely edentulous population, both at the local and global levels, is eminently heterogeneous, including patients from diverse age groups, places of residence and educational levels^{2,31}.

In Chile (and in most of the world) the treatment par excellence offered to total edentulous people is the preparation of acrylic CMDs²¹, particularly in primary and secondary healthcare settings. Therefore, and considering the large number of completely edentulous individuals in the country, it would not be illogical to infer that we are faced with a large proportion of denture-wearing patients of different ages and biographical contexts. The transition from being a dentate person to a completely edentulous one has an impact on the aging process of people (whether they are elderly or not) and prevents the performance of normal daily activities³³. Edentulism can cause physical, psychological, and social disadvantages, decreased personal well-being^{11,26}; and even consequences on sexual functions from an emotional perspective³⁰. Then, the condition of edentulism has “holistic” implications on people, and if we take into account the prevalence of edentulism both at domestic and the international sphere, it becomes a serious public health problem¹⁰.

PROSTHETIC REHABILITATION AND POSITIVE AGING

It has already been mentioned that wearing prostheses, even if they consist of conventional acrylic CMDs (without the complement of osseointegrated implants), can improve the self-esteem of denture wearers, in addition to contributing to a better quality of life, including the possibility of emotionally and sexually relate to others in

the full sense of the term²⁶. Programs that provide treatments which consist of rehabilitation with conventional acrylic dentures have been shown to have a positive effect on the self-image of completely edentulous older people, as well as minimizing the negative impact on their social behavior²⁴. It is then evident that dental care services have great potential to improve quality of life and the ability to maintain an autonomous lifestyle whether in adulthood and/or old age⁶. It is true that chronological age is undoubtedly a factor that directly correlates with complete edentulism and/or the use of prosthetic devices¹², with older people in the third and fourth ages being a numerically significant part of the edentulous population. However, older people should not be forced by medical advice to appear "toothless" in front of their partners during the nocturnal rest period, without considering their opinion regarding the acceptability and/or relevance of such recommendation. At a cultural level – therefore, including healthcare environments – it can be insinuated or instilled the misconception or pernicious "ageist" idea that the "older people-denture wearer" duo is a synonym for absence of sexual activity or affective life. There is strong evidence that demonstrates this argumentative fallacy^{1,14,29}. Health recommendations should be formulated within a holistic framework that promotes positive aging, which entails identifying older people as right-holders and key players in our societies, and

perceiving aging not only as the fact of reaching a certain age, but as a construction of the society regarding the ways of approaching old age²⁷. Old age should no longer be seen from an illness-oriented perspective, on the contrary, the medical discourse and actions should focus on health, portraying aging in a positive light, aiming for personal growth through several approaches³².

FROM THE RECOMMENDATION ITSELF: CHILEAN AND INTERNATIONAL CONTEXT

First of all, we believe it is necessary to clarify a semantic aspect that is related to the verb "to recommend" which, in the medical field, implies "to advise something to someone for their own good"²⁵. This clarification is important because this term is employed with some regularity in the text of the Chilean ministerial guidelines and it is assumed that there is an underlying intention to highlight that their contents duly safeguard the epidemiological heterogeneity of the population to whom such recommendation is directed. In Chile, rather than professional societies or foundations, it is the Ministry of Health (MINSAL) and more specifically, the Directorate for Disease Prevention and Control (DIPRECE), which takes responsibility for establishing a benchmark for health professionals. Particularly in the Dentistry field, the production of these supporting materials has been quite prolific as it can be seen in Figure 1.

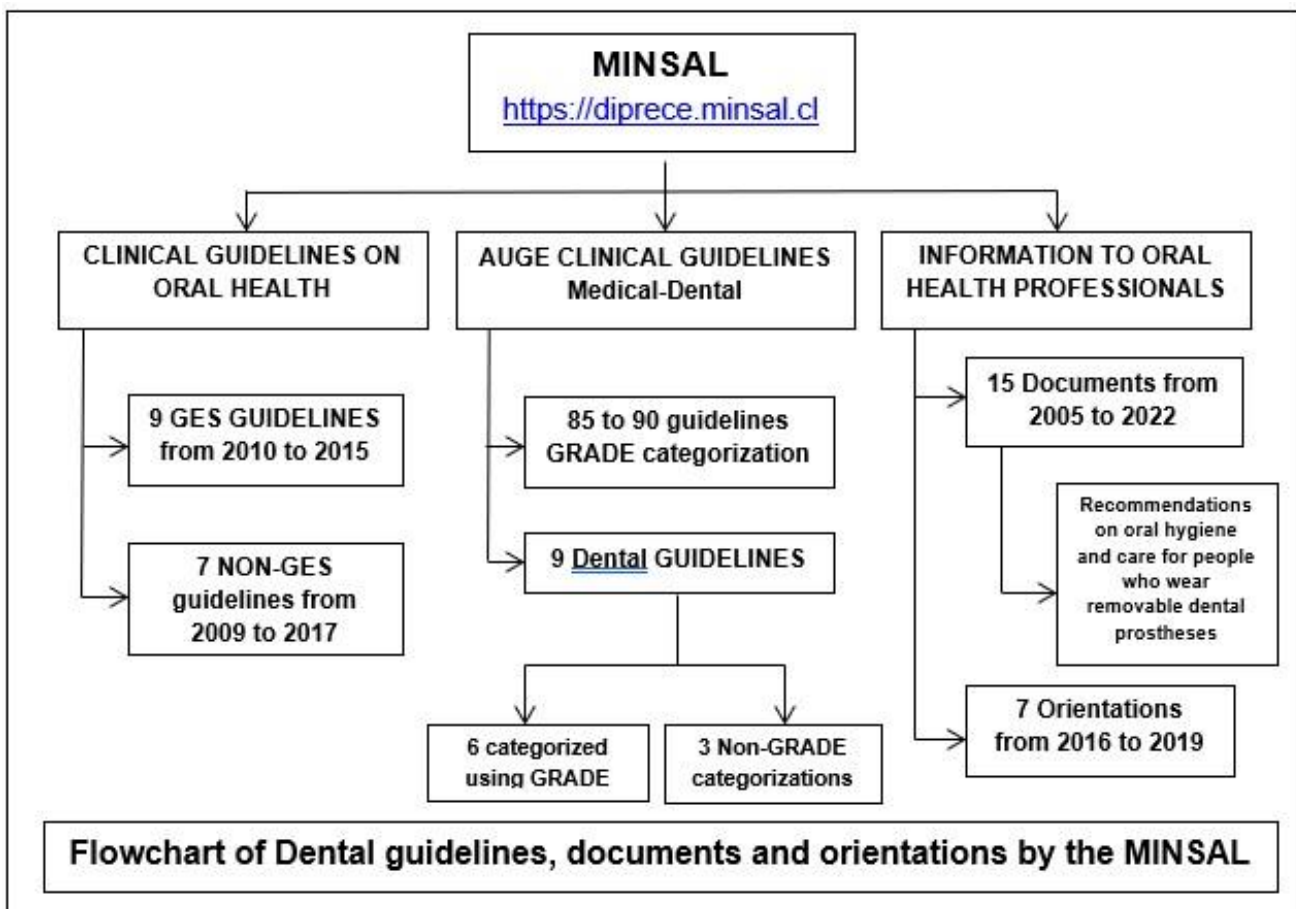


Figure 1: Flowchart of Dental guidelines, documents and orientations issued by the MINSAL.

Clinical Practice Guidelines (CPGs) consist of a set of recommendations aimed at optimizing patient care, since they are based on a systematic review of evidence and on the assessment of risks and benefits of alternative therapeutic options. For the preparation of these CPGs, the GRADE (Grading of Recommendations, Assessment,

Development and Evaluation) approach was applied. Among this wealth of support material, we can notice the "Guías de Práctica Clínica AUGE" [AUGE CPGs (AUGE = Spanish acronym for "Universal Access to Explicit Health Guarantees")] due to their methodological rigor. When it comes to CMDs we shall highlight: "Salud Oral

Integral de la Embarazada” [Comprehensive Oral Healthcare for Pregnant Women]¹⁷ and “Guía de Práctica Clínica Salud Oral Integral: Tratamiento y Rehabilitación Oral en Personas Adultas y Personas Mayores con Edentulismo Parcial o Total” [CPGs on Comprehensive Oral Health: Oral Treatment and Rehabilitation in Adults and Older People with Partial or Complete Edentulism]²⁰.

In relation to denture care practices and taking CMDs out at night, only in the first version of the CPGs on Comprehensive Oral Health for adults aged 60 years, which was published in 2007, it is recommended to “remove dentures at night and clean them with a soft brush and toothpaste, and then store them in a container with pure water, rinsing your mouth after using them”¹⁶ (MINSAL, 2007). In the same guidelines it is reported that this statement is based on level IV evidence, grade D recommendation, that is, obtained from experts, committee reports, or opinion and/or clinical experience of respected authorities, being ranked at the lowest level of scientific evidence²⁰. Subsequently, this recommendation is mentioned again in an information document dating from 2019, which was directed at oral health professionals and was specifically titled “Oral hygiene and care recommendations for removable dental prosthesis wearers”⁵. This document was prepared by the technical officers of the DIPRECE, along with a group of dentists who are members of the professional societies of Gerodontology, Periodontics and from the Department of the Older People Program⁵. Although the text emphasizes daily denture hygiene practices, it also refers to their nocturnal removal, stating that “to reduce the risk of inflammation of the oral mucosa in contact with the prosthesis (stomatitis), it is recommended to take dentures out for a few hours a day, preferably at night”⁵ and “nocturnal use of prostheses is not recommended, because in addition to an increased risk of fungi-induced inflammation, there may be an increased risk of pneumonia”⁵. The bibliographic support for these two statements (according to the references of the document itself) is based on three articles: the first studied the risk of pneumonia only in institutionalized patients over 85 years of age¹⁵; the second related stomatitis to poor denture hygiene (not to removing or leaving prosthetic devices in)¹³; and only the third one managed to demonstrate a greater number of colony-forming units of *candida albicans* among edentulous patients who wear CMDs during the night³.

Outside the governmental sphere, and rather within local university context, in which this subject has also been addressed, we would like to highlight the existence of two guidelines^{4,9} that were developed by the Universidad de Valparaíso (UV), Chile, which present an articulated vision centered on a preventive approach, without reflecting ageist biases. Similarly, these guidelines recommend to remove CMDs for a period of time, but not to peremptorily do so overnight, and unlike the previous examples, they place greater emphasis on the hygiene of the patient's tongue and oral mucosa: “if you do not have natural teeth, you can clean your mouth with an ultra-soft brush, such as a baby toothbrush, or with a gauze pad dampened in warm water, wrapped around one of your fingers. Gently clean your mouth thoroughly a couple of times, especially the gums or palatal region

that are covered by the prosthesis”^{4,9}. These guidelines reinforce the idea that the patient should be granted autonomy to make health decisions, introducing flexibility in the time of the eventual removal of prosthetic devices, stating as an example the assertion “if you don't want to be seen without teeth, remove your dentures a few hours a day, when you're alone”⁴. Furthermore, a warning is displayed indicating that the greatest risks of developing aspiration pneumonia caused by overnight wear of CMDs have been identified in institutionalized dependent elderly people “where the quality of care and maintenance of dentures may be insufficient or non-existent”⁹ (a population that is evidently smaller than the total number of patients who wear CMDs).

Since edentulism is a globally relevant phenomenon, we firmly believe that it would not be appropriate to disregard what has been proposed at international level in relation to the extensively discussed recommendation which constitutes the guiding principle of our article. Thus, our search for information on this subject led us to two guidelines, the first⁷ originated within a professional association from the United States and the other, created under the auspices of the prestigious Oral Health Foundation from Europe². Nevertheless, the latter document not only reports the position of professional societies from the aforementioned continent, but also provides data from Canada, Japan, New Zealand, and even addresses what has been exposed by American organizations. It goes without saying that both papers are supported by a huge set of bibliographic references (121 and 35 references, respectively, according to their publication timeline).

Below is a brief outline of some statements extracted from each article that we believe is more relevant to our line of argument.

Evidence-based guidelines for the care and maintenance of complete dentures: A publication of the American College of Prosthodontists, 2011:

In February 2011, a working panel of renowned American professional associations (ACP, ADA, among others) published in The Journal of the American Dental Association a guide for the care and maintenance of prostheses based on the best available evidence. Unfortunately, one of the conclusions of the guide is that evidence-based guidelines for the care and maintenance of removable complete denture prostheses do not exist. The guide in question consists of 15 items, with No. 14 being related to what concerns us, stating that “while existing studies provide conflicting results, it is not recommended that dentures be worn continuously (24 hours per day) in an effort to reduce or minimize denture stomatitis.”⁷. However, it should also be noticed, as established in item No. 1 of the guide referred to above, that “careful daily removal of the bacterial biofilm present in the oral cavity and on complete dentures is of paramount importance to minimize denture stomatitis and to help contribute to good oral and general health”⁷. In relation to denture stomatitis, it is concluded that “eradicating this disease requires treatment of both the oral tissues and the removable prostheses”⁷.

White Paper by the Global Task Force for Care of Full Dentures, 2018:

In 2018, the Oral Health Foundation made guidelines (only valid for full dentures) to improve the oral and general health of denture wearers worldwide. Among their conclusions were that: "denture wearers should not keep their dentures in the mouth overnight, unless there are specific reasons for keeping them in"². In addition, the paper recommends the dental community to invest in further research, in order to "refine the evidence for more specific guidelines on "the attitude towards wearing dentures at night"². They recommended the highest priority for research should be focused on preventing denture stomatitis and pneumonia among vulnerable (frail) or institutionalized denture-wearing older people (those living in nursing homes and long-term residential institutions). The guidelines stated that many professionals recommend not wearing dentures at night but "the reasons for this are unclear"². Some suggest it would give the underlying tissues the opportunity to recover; others think that it reduces the risk of fungal infection.

The authors also say that they were surprised to note that worldwide-renowned organizations, such as the WHO and the FDI did not have any guidelines for denture cleaning on their websites "we were disappointed by the lack of appropriate research and of evidence-based guidelines"². "When it comes to recommendations about removing dentures during the night, these go from no-removal to overnight removal, or for at least 6-8 hours. The reasoning behind this suggestion may be that mucosa should rest for a period of time during the day, or that wearing dentures for 24 hours a day increases the accumulation of oral biofilm and the risk of developing stomatitis. However, in the guidance or orientations contained in the guidelines of thirteen countries, there is no evidence to support any of these guidelines"². "Although the number of people wearing dentures is increasing worldwide, we failed to find new evidence to reaffirm or adjust the guidelines for the care and maintenance of complete dentures published by the American College of Prosthodontics (ACP) in 2011. Further evidence is required to demonstrate the possible need to remove dentures to help prevent, for example, denture stomatitis and potential systemic complications"².

Before concluding and having already explained the core components of our request to modify this sort of paradigm or unspoken dominant consensus, we would like to underscore two pathological clinical situations that appear to be unquestionable and that are in line with what has been emphasized by both international guidelines. Despite advocating for a "preventive or prophylactic" standpoint that accounts for the "uniqueness" of the patient, we consider that there are nosological entities such as "aspiration pneumonia" and "denture stomatitis" that are highly prevalent and should not be disregarded, since we are not promoting a spirit

of voluntarism that seeks to conceal reality. In the first place, the relationship between aspiration pneumonia and overnight wearing of CMDs. It should be clarified that this disease is observed only in institutionalized, dependent elderly patients (methicillin-resistant *Staphylococcus aureus*), or in immunosuppressed and hospitalized patients¹⁵. In the second place, the most prevalent mucosal lesion in prosthesis wearers is denture stomatitis (DS). It should be noted that the main etiological factors of DS are poor adaptation of dentures and the presence of fungi²⁸. Moreover, the complexity of oral microbiome and the interactions of this ecosystem must be taken into account, in addition to the bacterial microbiome of denture wearers which is not consistent throughout the mouth²³. It has been found that in patients with optimal denture hygiene, the incidence and recurrence of stomatitis is significantly reduced²².

Conclusion

The analysis of the aforementioned documents allows us to conclude that there is no consensus, either local or global, regarding the hygiene and care recommendations for completely edentulous denture-wearing patients with CMDs. With respect to national and international spheres, it may even be noted that there are certain discrepancies in the tone of the publications, both between guidelines issued by ministries and protocols originated in local university environments, as well as between papers produced by American or European professional associations and/or organizations.

A medical recommendation, in its advisory function, should be developed according to the patient's biopsychosocial context and the available high-quality scientific evidence. Considering the heterogeneity of the population wearing CMDs, the opinion of the authors is that there is a need to disseminate a new cleaning routine for outpatients to adopt. This routine should address the hygiene of alveolar ridge mucosa, dorsum of the tongue, as well as the prosthetic device, and compulsory nocturnal removal of dentures should be reserved for very specific cases (those already mentioned). Thus, we would implement not only a countercultural shift, avoiding "ageist" attitudes (in other words, prejudices, stereotypes and discriminatory attitudes toward older people) which do not ponder the possession of rights enjoyed by these patients, but also we would improve the quality of life of many people (young or older) who by no means want to reveal their oral situation to their peers and partners. In conclusion, the concept of nocturnal removal of CMDs should not be endorsed and/or recommended to be beneficial "per se" for all denture-wearing patients.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

References

- Bach LE, Mortimer JA, VandeWeerd C, Corvin J. The Association of Physical and Mental Health with Sexual Activity in Older Adults in a Retirement Community. *The Journal of Sexual Medicine*. 2013;10(11):2671-2678. doi:10.1111/jsm.12308
- Oral Health Foundation. White Paper on Optimal Care and Maintenance of Full Dentures for Oral and General Health. Available at: <https://www.dentalhealth.org/Handlers/Download.ashx?IDMF=8a8a723a-20c5-4064-8f37-1947ab94481a>. Accessibility verified June 10, 2024.
- Compagnoni MA, Souza RF, Marra J, Pero AC, Barbosa DB. Relationship between Candida and nocturnal denture wear: quantitative study. *Journal Of Oral Rehabilitation*. 2007;34(8):600-605. doi:10.1111/j.1365-2842.2007.01754.x
- Cordero, K., Pérez, M., & Rivera, M. GUÍA DE CUIDADO BUCAL PARA ADULTOS MAYORES. Available at: <https://facultadodontologia.uv.cl/images/Documentos/guia-cuidados-bucales-adultos-mayores.pdf>. Accessibility verified June 10, 2024
- Departamento Salud Bucal MINSAL. Recomendaciones de higiene bucal y cuidados para personas portadoras de prótesis dentales removibles. Available at: <https://diprece.minsal.cl/wp-content/uploads/2019/05/recomendaciones-de-higiene-y-cuidados-para-personas-portadoras-de-pr%3e93tesis-removibles-24042019.pdf>. Accessibility verified June 10, 2024.
- Donnelly LR, MacEntee MI. Social interactions, body image and oral health among institutionalised frail elders: an unexplored relationship. *Gerodontology*. 2012;29(2). doi:10.1111/j.1741-2358.2011.00523.x
- Felton D, Cooper L, Duqum I, et al. Evidence-Based Guidelines for the Care and Maintenance of Complete Dentures: A Publication of the American College of Prosthodontists. *Journal Of Prosthodontics*. 2011;20(s1). doi:10.1111/j.1532-849x.2010.00683.x
- Fernández E, Padilla P, Monardes H, Díaz C. Actitud hacia el adulto mayor en estudiantes del pregrado de la Facultad de odontología Universidad San Sebastián, Santiago. *Revista Estomatológica Herediana*. 2017;27(1):21. doi:10.20453/reh.v27i1.3099
- Geropolis UV & Escuela Odontología Universidad de Valparaíso. CUIDADOS ORALES Y PERSONAS MAYORES. Available at: [Gerópolis UV](https://www.geropolis.cl/). Accessibility verified June 10, 2024
- Gutiérrez B. El adulto mayor sin dientes: una paradoja del envejecimiento desde el discurso positivo. *Revista Guillermo de Ockham*. 2022;21(1):PRESS. doi:10.21500/22563202.5728
- Heydecke G, Boudrias P, Awad MA, De Albuquerque RF, Lund JP, Feine JS. Within-subject comparisons of maxillary fixed and removable implant prostheses. *Clinical Oral Implants Research*. 2003;14(1):125-130. doi:10.1034/j.1600-0501.2003.140117.x
- Kassebaum NJ, Bernabé E, Dahiya M, Bhandari B, Murray CJL, Marcenes W. Global Burden of Severe Tooth Loss. *Journal Of Dental Research*. 2014;93(7_suppl):20S-28S. doi:10.1177/0022034514537828
- Kulak-Ozkan Y, Kazazoglu E, Arikan A. Oral hygiene habits, denture cleanliness, presence of yeasts and stomatitis in elderly people. *Journal Of Oral Rehabilitation*. 2002;29(3):300-304. doi:10.1046/j.1365-2842.2002.00816.x
- Lindau ST, Leitsch SA, Lundberg KL, Jerome J. Older Women's Attitudes, Behavior, and Communication about Sex and HIV: A Community-Based Study. *Journal Of Women's Health*. 2006;15(6):747-753. doi:10.1089/jwh.2006.15.747
- Linuma T, Arai Y, Abe Y, et al. Denture Wearing during Sleep Doubles the Risk of Pneumonia in the Very Elderly. *Journal Of Dental Research*. 2014;94(3_suppl):28S-36S. doi:10.1177/0022034514552493
- Ministerio de Salud (MINSAL). Guía Clínica Salud Oral Integral Para Adultos de 60 Años. Available at: <https://www.minsal.cl/portal/url/item/7221747c2c9484b7e04001011f0141a4.pdf>. Accessibility verified June 10, 2024.
- Ministerio de Salud (MINSAL). Guía Clínica Salud Oral Integral de la Embarazada. Available at: <https://www.minsal.cl/portal/url/item/955578f79a24ef2ae04001011f01678a.pdf>. Accessibility verified June 10, 2024.
- Informes encuestas. EPI – Departamento de Epidemiología. <https://goo.gl/oe2iVt>
- Proyecciones de población. Default. <https://www.inec.gov.cl/estadisticas/sociales/demo-grafia-y-vitales/proyecciones-de-poblacion>
- Ministerio de Salud (MINSAL). Resumen Ejecutivo Guía de Práctica Clínica Salud Oral Integral. Tratamiento y Rehabilitación Oral en Personas Adultas y Personas Mayores con Edentulismo Parcial o Total. Available at: https://diprece.minsal.cl/wp-content/uploads/2022/08/RE_GPC-Edentulismo_2018-corregir-autores-03082022-v4.pdf. Accessibility verified June 10, 2024.
- Ministerio de Salud (MINSAL). Orientaciones técnico-administrativas para la ejecución del programa odontológico integral 2022. Available at: <https://www.studocu.com/cl/document/universidad-del-alba/clinica-de-odontogeriatría/0-orientacion-tecnica-programa-odontologico-integral-2022-extracto-mas-sonrisas/44611977>. Accessibility verified June 10, 2024.
- Mylonas P, Milward P, McAndrew R. Denture cleanliness and hygiene: an overview. *British Dental Journal*. 2022;233(1):20-26. doi:10.1038/s41415-022-4397-1
- O'Donnell LE, Robertson D, Nile CJ, et al. The Oral Microbiome of Denture Wearers Is Influenced by Levels of Natural Dentition. *PLoS One*. 2015;10(9):e0137717. doi:10.1371/journal.pone.0137717
- Papadaki E, Anastasiadou V. Elderly complete denture wearers: a social approach to tooth loss. *Gerodontology*. 2011;29(2). doi:10.1111/j.1741-2358.2011.00550.x
- Real academia española y Asociación de academia de la lengua española. Diccionario panhispánico de

- dudas (DPD) [online]. Available at: <https://www.rae.es/dpd/recomendar>. Accessibility verified june 10, 2024
26. Rojas-Gómez PN, Mazzini-Torres MF, Romero-Rojas K. Pérdida dentaria y relación con los factores fisiológicos y psico-socio económicos. *DOAJ (DOAJ: Directory of Open Access Journals)*. Published online 1 de abril de 2017. doi:10.23857/dc.v3i2.446
 27. Servicio Nacional del Adulto Mayor (SENAMA). Envejecimiento Positivo en Chile. Available at: https://www.senama.gob.cl/storage/docs/Envejecimiento_Positivo.pdf. Accessibility verified june 10, 2024
 28. Suresan V, Mantri S, Deogade S, et al. Denture hygiene knowledge, attitudes, and practices toward patient education in denture care among dental practitioners of Jabalpur city, Madhya Pradesh, India. *The Journal of Indian Prosthodontic Society*. 2016;16(1):30. doi:10.4103/0972-4052.175714
 29. Thomas HN, Hess R, Thurston RC. Correlates of Sexual Activity and Satisfaction in Midlife and Older Women. *Annals of Family Medicine*. 2015;13(4):336-342. doi:10.1370/afm.1820
 30. Turgut H, Turgut S. Effect of Edentulism and Oral Quality of Life on Sexual Functions in Men: A Cohort Prospective Study. *Sexual Medicine*. 2021;9(2):100305. doi:10.1016/j.esxm.2020.100305
 31. World Health Organization. Global oral health status report: towards universal health coverage for oral health by 2030. Available at: <https://www.who.int/publications-detail-redirect/9789240061484>. Accessibility verified june 10, 2024
 32. Tadic D, Virpi Timonen (2016). Beyond Successful and Active Ageing: A Theory of Model Ageing. Bristol, UK: Policy Press, 119 pp. ISBN 978 1 4473 3017 2 (hardback). *International Journal of Ageing And Later Life*. 2017;11(2):87-88. doi:10.3384/ijal.1652-8670.11_2a
 33. Haro DY, López-Alegría F. Influencia de la salud oral en la calidad de vida de los adultos mayores: una revisión sistemática. *International Journal Of Interdisciplinary Dentistry*. 2023;16(1):62-70. doi:10.4067/s2452-55882023000100062