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Prof. Dr. Claus-Peter Ernst

Editorial: Digeridoo statt Albhorn

[1] https://de.wikipedia.org/wiki/Ig-Nobelpreis

[2] https://www.srf.ch/wissen/forschung/ig-nobelpreise-neu-in-zuerich-europa-statt-usa-ig-nobelpreise-fliehen-vor-unsicherem-amerika

[3] https://de.wikipedia.org/wiki/Annals_of_Improbable_Research

[4] https://www.dgzs.de

[5] https://www.swissinfo.ch/ger/didgeridoo-gegen-das-schnarchen-ig-nobelpreis-fuer-zuercher-forscher/43520784

[6] Puhan MA, Suarez A, Lo Cascio C, Zahn A, Heitz M, Braendli O. Didgeridoo playing as alternative treatment for obstructive sleep apnoea syndrome: randomised controlled trial. BMJ. 2006 Feb 4; 332 (7536): 266-270.

[7] Ayas NT, Epstein LJ. Oral appliances in the treatment of obstructive sleep apnea and snoring. Curr Opin Pulm Med. 1998; 4(6): 355-360.

[8] Bennett LS, Davies RJ, Stradling JR. Oral appliances for the management of snoring and obstructive sleep apnoea. Thorax. 1998; 53 Suppl 2: S58-64.

[9] Ferguson KA, Ono T, Lowe AA, Keenan SP, Fleetham JA. A randomized crossover study of an oral appliance vs nasal-continuous positive airway pressure in the treatment of mild-moderate obstructive sleep apnea. Chest. 1996; 109(5): 1269-1275.

[10] Fleetham JA, Ferguson KA, Lowe AA, Ryan CF. Oral appliance therapy for the treatment of obstructive sleep apnea. Sleep. 1996; 19(10 Suppl): S288-90.

[11] https://de.wikipedia.org/wiki/Alphorn

[12] https://de.wikipedia.org/wiki/Didgeridoo

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Dr. Emil. E. Krumholz

Die zentrale Rolle der zahnärztlichen Schlafmedizin im interdisziplinären Kontext des Konvolutes schlafbezogener Atmungsstörungen

[1] Bernhardt O, Giannakopoulos NN, Heise M, Meyer A, Norden D, Schlieper J, Kares H S1-Leitlinie „Die Unterkieferprotrusionsschiene (UPS): Anwendung in der zahnärztlichen Schlafmedizin beim Erwachsenen“ AWMF-Registernummer: 083-045 /https://register.awmf.org/assets/guidelines/083-045l_S1_Die-Unterkieferprotrusionsschiene-UPS-zahnaerztliche-Schlafmedizin_bei-Erwachsenen_2022-01.pdf

[2] Javaheri, S.; Badr, M.S. Central Sleep Apnea: Pathophysiologic Classification. Sleep 2023, 46, zsac113

[3] Kirkness JP, Schwartz AR, Schneider H, Punjabi NM, Maly JJ, Laffan AM, et al. Contribution of male sex, age and obesity to mechanical instability of the upper airway during sleep. J Appl Physiol 2008 Jun;104(6):1618–24. PubMed PMID: 18420722. PMCID: PMC2474771. Epub 2008/04/19.

[4] Conrad Iber, Sonia Ancoli-Israel, Andrew L. Chesson, Stuart F. Quan: The AASM Manual for the Scoring of Sleep and Associated Events: Rules, Terminology, and Technical Specifications. Hrsg.: American Academy of Sleep Medicine. AASM, Westchester, Ill. 2007.

[5] Adam V Benjafield, PhDa · Najib T Ayas, MDb · Prof Peter R Eastwood, PhDc · Raphael Heinzer, MDd · Prof Mary S M Ip, MDe · Prof Mary J Morrell, PhDf Estimation of the global prevalence and burden of obstructive sleep apnoea: a literature-based analysis. The Lancet Volume 7, Issue 8p687-698August 2019

[6] Quan, S.F.; Schmidt-Nowara, W. The Role of Dentists in the Diagnosis and Treatment of Obstructive Sleep Apnea: Consensus and Controversy. J. Clin. Sleep Med. 2017, 13, 1117–1119.

[7] Alkharouby, S.A.; Alkhudhayri, S.L.; Alhassani, S.L.; Alghamdi, H.S.; Alsahafi, R.A.; Mariappan, N.; Barashi, M.A.; Alhazmi, H.A. General Dentists and Dental Specialists’ Knowledge of Treatment, Diagnosis, Referral, and Risk Factors of Obstructive Sleep Apnea: A Systematic Review. Dent. J. 2025, 13, 187.

[8] Marchetti, E.; Petro, E.; Gaggioli, F.; Lardani, L.; Mancini, L.; Marzo, G. The Dentist's Role in Diagnosis and Treatment of Obstructive Sleep Apnea Syndrome: A Literature Review. J. Biol. Regul. Homeost. Agents 2020, 34, 173–180.

[9] Cistulli, P.A.; Balasubramaniam, R. The Interdisciplinary Field of Sleep Medicine-Time for Dentists to Sink Their Teeth into It!Aust. Dent. J. 2024, 69, S108–S111.

[10] Herrero Babiloni, A.; Beetz, G.; Dal Fabbro, C.; Martel, M.O.; Huynh, N.; Masse, J.F.; Sessle, B.; Lavigne, G.J. Dental Sleep Medicine: Time to Incorporate Sleep Apnea Education in the Dental Curriculum. Eur. J. Dent. Educ. 2020, 24, 605–610.

[11] Haviv, Y.; Benoliel, R.; Bachar, G.; Michaeli, E. On the Edge between Medicine and Dentistry: Review of the Dentist's Role in the Diagnosis and Treatment of Snoring and Sleep Apnea. Quintessence Int. 2014, 45, 345–353.

[12] Lobbezoo, F.; de Vries, N.; de Lange, J.; Aarab, G. A Further Introduction to Dental Sleep Medicine. Nat. Sci. Sleep 2020, 12,1173–1179

[13] MW Johns: A new method of measuring daytime sleepiness: Epworth Sleepiness Scale. Sleep 1991;

[14] D. J. Buysse, C. F. Reynolds, T. H. Monk, S. R. Berman, D. J. Kupfer: *The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research.* In: *Psychiatry Research.* Band 28, Nr. 2, Mai 1989, S. 193–213

[15] Lonia, L.; Scalese, M.; Rossato, G.; Bruno, G.; Zalunardo, F.; De Stefani, A.; Gracco, A. Validity of the STOP-Bang Questionnaire in Identifying OSA in a Dental Patient Cohort. Medicina 2020, 56, 324.

[16] Chen, L.; Pivetta, B.; Nagappa, M.; Saripella, A.; Islam, S.; Englesakis, M.; Chung, F. Validation of the STOP-Bang Questionnaire for Screening of Obstructive Sleep Apnea in the General Population and Commercial Drivers: A Systematic Review and Meta-Analysis. Sleep Breath. 2021, 1–11.

[17] Farney RJ et al.: The Stop-Bang equivalent Model and Prediction of Severity of OSA. J Clin Sleep Med 2011;

[18] GU, W.; LEUNG, L. A Novel Home Screening Platform for Obstructive Sleep Apnea through Wearable Ring-Type Pulse Oximeter. Sleep 2018, 41, A182.

[19] Tisyakorn, J.; Saiphoklang, N.; Sapankaew, T.; Thapa, K.; Anutariya, C.; Sujarae, A.; Tepwimonpetkun, C. Screening Moderate to Severe Obstructive Sleep Apnea with Wearable Device. Sleep Breath. 2024, 29, 61.

[20] Kim AM, Keenan BT, Jackson N, Chan EL, Staley B, Poptani H, et al. Tongue fat and its relationship to obstructive sleep apnea. Sleep 2014 Oct 1;37(10):1639–48. PubMed PMID: 25197815. PMCID: PMC4173920. Epub 2014/09/10.

[21] Maniaci, A.; Lavalle, S.; Anzalone, R.; Lo Giudice, A.; Cocuzza, S.; Parisi, F.M.; Torrisi, F.; Iannella, G.; Sireci, F.; Fadda, G.; et al. Oral Health Implications of Obstructive Sleep Apnea: A Literature Review. Biomedicines 2024, 12, 1382

[22] Lobbezoo, F.; Lavigne, G.J.; Kato, T.; de Almeida, F.R.; Aarab, G. The Face of Dental Sleep Medicine in the 21st Century. J. Oral Rehabil. 2020, 47, 1579–1589.

[23] Wetselaar P, Manfredini D, Ahlberg J,et al. Associations between tooth wear and dental sleep disorders: A narrative overview. J Oral Rehabil. 2019; 46:765–775.

[24] Joaquín Durán-Cantolla, Mohammad Hamdan Alkhraisat, Cristina Martínez-Null, Jose Javier Aguirre, Elena Rubio Guinea, Eduardo Anitua Frequency of Obstructive Sleep Apnea Syndrome in Dental Patients with Tooth Wear Journal of clinical sleep medicine. pii: jc-00375-14

[25] Ramona Cioboata , Mara Amalia Balteanu , Denisa Maria Mitroi, Oana Maria Catana ,Maria-Loredana Tieranu , Silviu Gabriel Vlasceanu , Eugen Nicolae Tieranu , Viorel Biciusca and Adina Andreea Mirea. Interdisciplinary Perspectives on Dentistry and Sleep Medicine: A Narrative Review of Sleep Apnea and Oral Health. Dentistry and Sleep Medicine: J. Clin. Med. 2025, 14,5603.

[26] Giovanni A, Giorgia A. The neurophysiological basis of bruxism. Heliyon. 2021 Jul 3;7(7)

[27] Sambale, J.; Koehler, U.; Conradt, R.; Kesper, K.; Cassel, W.; Degerli, M.; Viniol, C.; Korbmacher-Steiner, H.M. Is Sleep Bruxism in Obstructive Sleep Apnea Only an Oral Health Related Problem? BMC Oral Health 2024, 24, 565

[28] Carra, M.C.; Lavigne, G.J. Sleep Bruxism, Obstructive Sleep Apnea, and Periodontitis: The Difference between Implying Association and Inferring Causality. Sleep Med. 2025, 132, 106594.

[29] Gary D Slade 1, Roger B Fillingim, Anne E Sanders, Eric Bair, Joel D Greenspan, Richard Ohrbach, Ronald Dubner, Luda Diatchenko, Shad B Smith, Charles Knott, William Maixner Summary of findings from the OPPERA prospective cohort study of incidence of first-onset temporomandibular disorder: implications and future directions J Pain 2013 Dec;14(12 Suppl):T116-24

[30] Perez CV, de Leeuw R, Okeson JP, Carlson CR, Li HF, Bush HM, Falace DA (2013) The incidence and prevalence of temporomandibular disorders and posterior open bite in patients receiving mandibular advancement device therapy for obstructive sleep apnea. Sleep Breath 17:323–332

[31] Alessandri-Bonetti A, Bortolotti F, Moreno-Hay I, Michelotti A, Cordaro M, Alessandri-Bonetti G, Okeson JP Effects of mandibular advancement device for obstructive sleep apnea on temporomandibular disorders: a systematic review and meta-analysis. Sleep Med Rev 48:101211

[32] Pico-Orozco, J.; Silvestre, F.J.; Carrasco-Llatas, M.; Silvestre-Rangil, J. Dental Caries Status in Adults with Sleep Apnea—Hypopnea Syndrome. J. Clin. Exp. Dent. 2022, 14, 274–279.

[33] Anamaria Kurtović , Jasminka Talapko , Sanja Bekić , Ivana Škrlec The Relationship between Sleep, Chronotype, and Dental Caries—A Narrative Review Clocks Sleep. 2023 May 15;5(2):295–312.

[34] Al-Jewair, T.S.; Al-Jasser, R.; Almas, K. Periodontitis and Obstructive Sleep Apnea's Bidirectional Relationship: A Systematic Review and Meta-Analysis. Sleep Breath. 2015, 19, 1111–1120.

[35] Khodadadi, N.; Khodadadi, M.; Zamani, M. Is Periodontitis Associated with Obstructive Sleep Apnea? A Systematic Review and Meta-Analysis. J. Clin. Exp. Dent. 2022, 14, 359–365

[36] Pallavi, K.; Amaranath, B.J.J.; Das, N.; Mukherjee, K.; Das, A.; Katiyar, P. Determination of the Association between Obstructive Sleep Apnea and Chronic Periodontal Disease: A Cross-Sectional Study. J. Pharm. Bioallied Sci. 2024, 16, S3367–S3369

[37] Shibli, Fahmi MD; Skeans, Jacob MD; Yamasaki, Takahisa MD, PhD; Fass, Ronnie MD, Nocturnal Gastroesophageal Reflux Disease (GERD) and Sleep An Important Relationship That Is Commonly Overlooked. Journal of Clinical Gastroenterology 54(8):p 663-674, September 2020.

[38] Finke H, Drews A, Engel C, Koos B. Craniofacial risk factors for obstructive sleep apnea-systematic review and meta-analysis. J Sleep Res 2023 Jul 23;e14004.

[39] Monna, F.; Ben Messaoud, R.; Navarro, N.; Baillieul, S.; Sanchez, L.; Loiodice, C.; Tamisier, R.; Joyeux-Faure, M.; Pepin, J.L. Machine Learning and Geometric Morphometrics to Predict Obstructive Sleep Apnea from 3D Craniofacial Scans. Sleep Med.2022, 95, 76–83

[40] Marcos García , Juan A. Cabrera , Alex Bataller , Javier Vila , Pedro Mayoral Mandibular movement analisys by means of a kinematic model applied to the design of oral appliances for the treatment of obstructive sleep apnea Sleep Medicine 73 (2020) 29-37

[41] Vazqueez-Casal, Sans-Capdevila O, Moncunill-Mira J, Rivera-Baro A. Prevalence of sleep-related breathing disorders in children with malocclusion. J Clin Exp Dent 2020 Jun 1;12(6): e555-e560.

[42] Joel Reiter Treatment of OSA beyond adenotonsillectomy Pediatr Pulmonol 2025 Mar;60 Suppl 1(Suppl 1):S17-S18.

[43] Solveig Magnusdottir, Elizabeth A. Hill Prevalence of obstructive sleep apnea (OSA) among preschool aged children in the general population: A systematic review Sleep Medicine Reviews Volume 73, February 2024, 101871

[44] Arab, M.; El Ansari, Y.S.; Pelayo, R.; Yoon, A. Management of Paediatric Obstructive Sleep Apnoea: From a Multidisciplinary to an Interdisciplinary Care Model. Orthod. Craniofac Res. 2025.

[45] Moin Anwer, H.M.; Albagieh, H.N.; Kalladka, M.; Chiang, H.K.; Malik, S.; McLaren, S.W.; Khan, J. The Role of the Dentist in the Diagnosis and Management of Pediatric Obstructive Sleep Apnea. Saudi Dent. J. 2021, 33, 424–433

[46] Bellucci, R.; Campo, F.; Ralli, M.; Buonopane, C.; Girolamo, S.D.; Passali, D.; Minni, A.; Greco, A.; Vincentiis, M. Obstructive SleepApnea Syndrome in the Pediatric Age: The Role of the Dentist. Eur. Rev. Med. Pharmacol. Sci. 2019, 23, 9–14

[47] Eleonora Pisoni, Lorenza Buttafava, Stefania Guida2, Greta Castellini, Silvia Bargeri, Silvia Gianola. Myofunctional Therapy in Adults and Children With Obstructive Sleep Apnea: An Overview and Re-Analysis of Systematic Reviews Journal of Sleep Research, 2025 - 70219

[48] Wang, X.; Huang, D.; Qian, Y.; Zhu, M. Three-dimensional features of dental arch in children with obstructive sleep apnea: A systematic review and meta-analysis. J. Evid.Based Dent. Pract. 2024, 25, 102056.

[49] Marciuc, D.; Morarasu, S.; Morarasu, B.C.; Marciuc, E.A.; Dobrovat, B.I.; Pintiliciuc-Serban, V.; Popescu, R.M.; Bida, F.C.;Munteanu, V.; Haba, D. Dental Appliances for the Treatment of Obstructive Sleep Apnea in Children: A Systematic Review and Meta-Analysis. Medicina 2023, 59, 1447.

[50] Sambale, J.; Birk, R.; Koehler, U.; Hildebrandt, W.; Korbmacher-Steiner, H.M. An Interdisciplinary Approach: Presentation of the Pediatric Obstructive Sleep Apnea Diagnostic Examination Form (POSADEF). Diagnostics 2024, 14, 1593.

[51] Rolf G. Behrents, Anita Valanju Shelgikar, Scott Conley, Carlos Flores-Mir, Mark Hans Mitchell Levine Obstructive sleep apnea and orthodontics: An American Association of Orthodontists White Paper Am J Orthod Dentofacial Orthop 2019;156:13-28

[52] Gero Stefan Michael Kinzinger et al. Impact of rapid maxillary expansion on palatal morphology at different dentition stages Clin Oral Investig. 2022 Jul.

[53] Benjafield A, Pepin J, Cistulli P et al. Positive airway pressure therapy and all-cause and cardiovascular mortality in people with obstructive sleep apnoea: a systematic review and meta-analysis of randomised controlled trials and confounder-adjusted, non-randomised controlled studies The Lancet Respiratory Medicine, 2025; 13, 403-413

[54] Taranto-Montemurro L,Messineo L,SandsSA,AzarbarzinA, Marques M, Edwards BA, et al. The combination of atomoxetine and oxybutynin greatly reduces obstructive Sleep apnea severity. A randomized, placebo-controlled, double-blind crossover trial. AmJRespirCritCareMed2019;199(10):1267–76. 20.

[55] Thomson LDJ, Landry SA, Maddison K, Walsh R, Bleackley MR, Hamilton GS, Joosten SA, Walsh J, EdwardsBA. The impact of acetazolamide and dronabinol on the physiological endotypes responsible for obstructive sleep apnea. Sleep Med. 2025 Aug; 132:106542.

[56] Attali V, Chaumereuil C, Arnulf I, Golmard JL, Tordjman F, Morin L, Goudot P, Similowski T, Collet JM. Predictors of long-term effectiveness to mandibular repositioning device treatment in obstructive sleep apnea patients after 1000 days. Sleep Med. 2016 Nov-Dec;27-28:107-114. doi: 10.1016/j.sleep.2016.10.004. Epub 2016Oct 27. PMID: 27938910.

[57] Ferguson KA, Ono T, Lowe AA, al-Majed S, Love LL, Fleetham JA. A short-term controlled trial of an adjustable oral appliance for the treatment of mild to moderate obstructive sleep apnea. Thorax. 1997; 52:362–368.

[58] Marklund M, Braem MJA, Verbraecken J. Update on oral appliance therapy. Eur Respir Rev. 2019 Sep 25;28(153):190083.

[59] Hamoda, M.M.; Kohzuka, Y.; Almeida, F.R. Oral Appliances for the Management of OSA: An Updated Review of the Literature.Chest 2018, 153, 544–553 J. Clin. Med. 2025, 14, 5603 16 of 17

[60] Burlon G, Tepedino M, Laurenziello M, Troiano G, Cassano M, Romano L, Rinaldi R, Ciavarella D (2020) Evaluation of factors that influence the success rate of OSA treatment with a customised adjustable MAD device - a retrospective study Acta Otorhinolaryngol Ital 40:297–303

[61] Edwards BA, Andara C, Landry S, Sands SA, Joosten SA, Owens RL, et al. Upper-airway collapsibility and loop gain predict the response to oral appliance therapy in patients with obstructive sleep apnea. Am J Respir Crit Care Med. 2016;194:1413–1422.

[62] DGSM S3 Leitlinie Nicht erholsamer Schlaf- Kapitel Schlafbezogene Atmungsstörungen https://register.awmf.org/assets/guidelines/063_D_Ges_fuer_Schlafforschung_und_Schlafmedizin/063-001l_S3_SBAS_Teil-Aktualisierung_2020_2020-09.pdf

[63] Hasthi U Dissanayake, Juliana T Colpani, Kate Sutherland, Weiqiang Loke, Anna Mohammadieh , Yi-Hui Ou, Philip de Chazal , Peter A Cistulli , Chi-Hang Lee. Obstructive sleep apnea therapy for cardiovascular risk reduction-Time for a rethink? Clin Cardiol. 2021 Dec;44(12):1729-1738.

[64] Yi-Hui Ou , Juliana Tereza Colpani , Crystal S Cheong , Weiqiang Loke , As Tar Thant , E' Ching Shih , Frank Lee , Siew-Pang Chan , Ching-Hui Sia , Chieh-Yang Koo , Serene Wong , Aiping Chua , Chin-Meng Khoo , William Kong , Calvin W Chin , Pipin Kojodjojo , Philip E Wong , Mark Y Chan , A Mark Richards , Peter A Cistulli , Chi-Hang Lee Mandibular Advancement vs CPAP for Blood Pressure Reduction in Patients With Obstructive Sleep Apnea J Am Coll Cardiol. 2024 May 7;83(18):1760-1772.

[65] Craig L. Phillips, Ronald R. Grunstein , M. Ali Darendeliler , Anastasia S. Mihailidou , Vasantha K. Srinivasan , Brendon J. Yee , Guy B. Marks and Peter A. Cistulli Health Outcomes of Continuous Positive Airway Pressure versus Oral Appliance Treatment for Obstructive Sleep ApneaA Randomized Controlled Trial American Journal of Respiratory and Critical Care Medicine - Volume 187, Issue 8

[66] Almeida FR, Lowe AA, Tsuiki S, Otsuka R, Wong M, Fastlicht S, Ryan F. Long-term compliance and side effects of oral appliances used for the treatment of snoring and obstructive sleep apnea syndrome. J Clin Sleep Med. 2005 Apr 15;1(2):143–52

[67] Olivier M Vanderveken 1, Marijke Dieltjens, Kristien Wouters, Wilfried A De Backer, Paul H Van de Heyning, Marc J Braem Objective measurement of compliance during oral appliance therapy for sleep-disordered breathing Thorax 2013 Jan;68(1):91-6. doi: 10.1136/thoraxjnl-2012-201900. Epub 2012 Sep 19

[68] Liselotte H van der Hoek # 1, Boudewijn R A M Rosenmöller # 2 3, Liza J M van de Rijt 1, Ralph de Vries 4, Ghizlane Aarab 1, Frank Lobbezoo Factors associated with treatment adherence to mandibular advancement devices: a scoping review Sleep Breath 2023 Dec;27(6):2527-2544

[69] Sambale J, Hass J, Koehler U, Waldmann S, Korbmacher-Steiner HM. Diagnostic and prognostic value of (cone-beam) computed tomography in dental sleep medicine for obstructive sleep apnea: a systematic review. Head Face Med. 2026 Mar 12. doi: 10.1186/s13005-026-00609-x. Epub ahead of print. PMID: 41821098

[70] Cunali PA, Almeida FR, Santos CD, Valdrichi NY, Nascimento LS, Dal-Fabbro C, Tufik S, Bittencourt LR (2011) Mandibular exercises improve mandibular advancement device therapy for obstructive sleep apnea. Sleep Breath 15:717–727

[71] Balasubramaniam, R.; McCloy, K.; Almeida, F.R.; Cistulli, P.A. Oral Appliance Therapy for Snoring and Obstructive Sleep Apnoea: A Practical Guide for Clinical Care. Aust. Dent. J. 2024, 69, S84–S100.

[72] Zertifikat Deutsche Gesellschaft für Zahnärztliche Schlafmedizin (DGZS) https://www.dgzs.de/mitgliedschaft/, https://www.apw.de/curriculum/zahnaerztliche-schlafmedizin

[73] Guarda-Nardini L, Manfredini D, Mion M, Heir G, Marchese- Ragona R (2015) Anatomically based outcome predictors of treatment for obstructive sleep apnea with intraoral splint devices: a systematic review of cephalometric studies. J Clin Sleep Med 11:1327–1334

[74] Messineo L, Bakker JP, Cronin J, Yee J, White DP. Obstructive sleep apnea and obesity: A review of epidemiology, pathophysiology and the effect of weight-loss treatments. Sleep Med Rev. 2024 Dec;78:101996

[75] Eckert DJ. Phenotypic approaches to obstructive sleep apnoea - New pathways for targeted therapy. SleepMed Rev. 2018 Feb; 37:45-59

[76] Messineo L, Eckert DJ. Obstructive sleep apnea phenotyping to understand pathophysiology and improvetreatment and outcomes. Encyclopedia of respiratory medicine. second ed.: Elsevier; 2022. p. 22–33.

[77] Andrisani, G.; Andrisani, G. Sleep Apnea Pathophysiology. Sleep. Breath. 2023, 27, 2111–2122

[78] Schmickl CN, Owens RL, Edwards BA, Malhotra A. OSA endotypes: what are they and what are their potential clinical implications? Curr Sleep Med Rep 2018;4:231–242

[79] Sutherland K, Phillips CL, Davies A, Srinivasan VK, Dalci O, Yee BJ, et al. CPAP pressure for prediction of oralappliance treatment response in obstructive sleep apnea. J Clin Sleep Med. 2014;10:943–949

[80] Grace KP, Hughes SW, Horner RL. Identification of the mechanism mediating genioglossus muscle suppression in REM sleep. Am J Respir Crit Care Med 2013; 187:311–9.

[81] Jacobowitz, O.; Afifi, L.; Alkan, U.; Penzel, T.; Poyares, D.; Kushida, C. Endorsement of “European Respiratory Society Guideline on Non-CPAP Therapies for Obstructive Sleep Apnoea” by World Sleep Society. Sleep Med. 2024, 113, 293–298.

[82] Riley RW, Powell NB, Giulleminault C (1990) Maxillofacial surgery and nasal CPAP. A comparison of treatment for obstructive sleep apnea syndrome. Chest 98:1421–1425

[83] Swope, J.J.; Couey, M.A.; Wilson, J.W.; Jundt, J.S. A Survey of Sleep Medicine Physician Perceptions on the Surgical Treatment of Obstructive Sleep Apnea. J. Oral Maxillofac. Surg. 2017, 75, 1010–1014

[84] Peter R Eastwood et al Blast- Bilateral hypoglossal nerve stimulation for treatment of adult obstructive sleep apnea PMCID: PMC6949509

[85] Peter Baptista , Madeleine Di Frisco, Elena Urrestarazu , Juan Alcalde, Manuel Alegre , Isabel Sanchez , Carlos O’Connor-Reina , Guillermo Plaza Quality of Life Impact of Hypoglossal Nerve Stimulation with Inspire® Device in Patients with

Obstructive Sleep Apnea Intolerant to Continuous Positive Airway Pressure Therapy PMCID: PMC9694893

[86] Geißler K, Guntinas-Lichius O. Chirurgie im Rachen – Adenotomie, Tonsillektomie, Tonsillotomie und Eingriffe bei obstruktivem Schlafapnoe-Syndrom. Laryngo-Rhino-Otologie 2016; 95(02): 132 -145

[87] Sundaram S, Lim J, Lasserson TJ (2009) Surgery for obstructive sleep apnea in adults. Cochrane Database Syst Rev 4:CD001004

[88] Farrar J, Ryan J, Oliver E, Gillespie MB (2008) Radiofrequency ablation for the treatment of obstructive sleep apnea: a meta-analysis. Review. Laryngoscope 118:1878–1883

[89] An Y, Li Y, Kang D, Sharama-Adhikari SK, Xu W, Li Y, Han D. The effects of nasal decongestion on obstructive sleep apnoea. Am J Otolaryngol. 2019 Jan-Feb;40(1):52-56. doi: 10.1016/j.amjoto.2018.08.003. Epub 2018Aug 23. PMID: 30243839.

[90] Clarenbach CF, Kohler M, Senn O, Thurnheer R, Bloch KE. Does nasal decongestion improve obstructive sleep apnea? J Sleep Res. 2008 Dec;17(4):444-9.

[91] Gao, Y.; Zhu, S.; Li,W.; Lai, Y. Comparative Efficacy of Sleep Positional Therapy, Oral Appliance Therapy, and CPAP in ObstructiveSleep Apnea: A Meta-Analysis of Mean Changes in Key Outcomes. Front. Med. 2025, 12, 1517274

[92] Dieltjens M et al. A promising concept of combination therapy for positional obstructive sleep apnea. Sleep Breath. 2015 May;19(2):637–44

[93] Carneiro-Barrera, A.; Amaro-Gahete, F.J.; Guillen-Riquelme, A.; Jurado-Fasoli, L.; Saez-Roca, G.; Martin-Carrasco, C.; Buela-Casal, G.; Ruiz, J.R. Effect of an Interdisciplinary Weight Loss and Lifestyle Intervention on Obstructive Sleep Apnea Severity: The INTERAPNEA Randomized Clinical Trial. JAMA Netw. Open 2022, 5, e228212.

[94] Louis J. Aronne, M.D., Deborah Bade Horn, D.O., Carel W. le Roux, M.D., Ph.D., Wayne Ho, M.D., Beverly L. Falcon, Ph.D., Elisa Gomez Valderas, M.Sc., Sagar Das, M.Sc., Clare J. Lee, M.D., M.H.S., Leonard C. Glass, M.D., Cagri Senyucel, M.D., Ph.D., and Julia P. Dunn, M.D., Tirzepatide as Compared with Semaglutide for the Treatment of Obesity Published May 11, 2025 New Engl Journal Med 2025;393:26-36 VOL. 393 NO. 1

[95] Icon Babak Mokhlesi , Juan Fernando Masa , Jan L. Brozek , Indira Gurubhagavatula , Patrick B. Murphy , Amanda J. Piper , Aiman Tulaimat , Majid Afshar , Jay S. Balachandran , Raed A. Dweik , Ronald R. Grunstein Evaluation and Management of Obesity Hypoventilation Syndrome. American Journal of Respiratory and Critical Care Medicine Volume 200, Issue 3

[96] Maurer, L.F., Aust, F. & Lorenz, N. Real-World-Evidenz für den Einsatz von digitaler kognitiver Verhaltenstherapie bei Insomnie in der Regelversorgung. *Somnologie* 29, 33–41 (2025). https://doi.org/10.1007/s11818-023-00422-7

[97] Dirk A. Pevernagie, Barbara Gnidovec-Strazisar, Ludger Grote, Raphael Heinzer, Walter T. McNicholas, Thomas Penzel, Winfried Randerath, Sophia Schiza, Johan Verbraecken, Erna S. Arnardottir On the rise and fall of the apnea−hypopnea index: A historical review and critical appraisal J Sleep Res. 2020 Aug;29(4):e13066. doi: 10.1111/jsr.13066. Epub 2020 May 14.

[98] McNicholas WT, Pevernagie D. Obstructive sleep apnea: transition from pathophysiology to an integrativedisease model. J Sleep Res. 2022 Aug;31(4):e13616.

[99] S Matthes M Treml L Grote J Hedner S Ryan S Schiza J Verbraecken W McNicholas A Pataka P Sliwinski Ö Basoglu M Bonsignore J Pépin W Randerath Neudefinition der Baveno-Klassifikation für obstruktive Schlafapnoe Pneumologie 2024; 78(S 01): S94

[100] Ong, J.C.; Crawford, M.R.; Kong, A.; Park, M.; Cvengros, J.A.; Crisostomo, M.I.; Alexander, E.I.; Wyatt, J.K. Management of Obstructive Sleep Apnea and Comorbid Insomnia: A Mixed-Methods Evaluation. Behav. Sleep Med. 2017, 15, 180–197

[101] Charles M Morin, Geneviève Belleville , Lynda Bélanger , Hans Ivers The Insomnia Severity Index: Psychometric Indicators to Detect Insomnia Cases and Evaluate Treatment Response Sleep. 2011 May 1;34(5):601–608

[102] Aysegul Gencer Ersan Atahan Pinar Kadioglu Investigation of the frequency of obstructive sleep apnea syndrome in patients with subclinical hypothyroidism ERJ Open Research 2022 8(4): 00186-2022

[103] Chen, Y.; Alhozgi, A.I.; Almeida, F.R. Dentoskeletal Changes of Long-Term Oral Appliance Treatment in Patients with Obstructive Sleep Apnea: A Systematic Review and Meta-Analysis. J. Prosthodont. 2025, 34, 62–79

[104] Doff, M.H.J.; Finnema, K.J.; Hoekema, A.; Wijkstra, P.J.; de Bont, L.G.M.; Stegenga, B. Long-Term Oral Appliance Therapy in Obstructive Sleep Apnea Syndrome: A Controlled Study on Dental Side Effects. Clin. Oral Investig. 2013, 17, 475–482

[105] Sheats RD Management of side effects of oral appliance therapy for sleep-disordered breathing:summary of American Academy of Dental Sleep Medicine recommendations. J Clin Sleep Med 16:835(2020)

[106] Rana A, Raut A, Mathur A The occlusal side effects of mandibular advancement device therapy in adult sleep apnea patients: a systematic review. Cureus 15: e48682 (2023)

[107] Uniken Venema JAM, Doff MHJ, Joffe-Sokolova DS, Wijkstra PJ, van der Hoeven JH, Stegenga B, Hoekema A Dental side effects of long-term obstructive sleep apnea therapy: a 10-year follow up study. Clin Oral Investig 24:3069–3076 (2020)

[108] Anitua E et al Minimizing the mandibular advancement in an oral appliance for the treatment of obstructive sleep apnea. Sleep Med. 2017

[109] Jo, J.-H. Management of Complications of Oral Appliance Therapy for Snoring and Obstructive Sleep Apnea. J. Korean Dent.Assoc. 2019, 57, 270–278

[110] Hiroshi Ueda , Fernanda R Almeida, Hui Chen, Alan A Lowe Effect of 2 jaw exercises on occlusal function in patients with obstructive sleep apnea during oral appliance therapy: a randomized controlled trial Dentofacial Orthop 2009 Apr;135(4):430.e1-7; discussion 430-1

[111] Anders Wänman , Susanna Marklund Treatment outcome of supervised exercise, home exercise and bite splint therapy, respectively, in patients with symptomatic disc displacement with reduction: A randomised clinical trial PMID: 31520538 PMCID,Clinical Trial . 1999;23(1):27-37.

[112] T Magnusson , M Syrén Therapeutic jaw exercises and interocclusal appliance therapy. A comparison between two common treatments of temporomandibular disorders Swed. Dent Journal PMID: 10371003

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Alterszahnmedizin – Zukunftsfeld der zahnärztlichen Profession

Teil 2: Prävention und Behandlung im Praxisalltag

[1] AWMF. S2k-Leitlinie Zahnmedizinische Betreuung geriatrischer Patienten. Im Internet: https://register.awmf.org/de/leitlinien/detail/083-047 (abgerufen: 17.03.2026).

[2] Bleiel D, Ludwig E, Spatzier H, Stillhart A, Nitschke I. Der mobile Einsatz - vier unterschiedliche Praxiskonzepte. Zeitschrift für Senioren-Zahnmedizin 2018; 6 (1): 23-65.

[3] BZÄK (Bundeszahnärztekammer): Musterberufsordnung §2(2 & 5). https://www.bzaek.de/recht/musterberufsordnung.html (abgerufen: 17.03.2026).

[4] DNQP (Deutsches Netzwerk für Qualitätsentwicklung in der Pflege). Expertenstandard Förderung der Mundgesundheit in der Pflege. Entwicklung – Konsentierung – Implementierung. Osnabrück: DNQP (2023).

[5] Fresmann S. Pflege & Zahnmedizin im Dialog – interprofessioneller Workshop. Zahnärzteblatt Baden-Württemberg 2024; 7: 12-13.

[6] G-BA1: Zahnärztliche Behandlung – Richtlinie nach § 22a SGB V: Richtlinie über Maßnahmen zur Verhütung von Zahnerkrankungen bei Pflegebedürftigen und Menschen mit Behinderungen. https://www.g-ba.de/richtlinien/96/ (abgerufen: 17.03.2026).

[7] G-BA2: Zahnärztliche Behandlung – Behandlungsrichtlinie: V. Behandlung von Parodontalerkrankungen außerhalb der systematischen Behandlung von Parodontitis und anderer Parodontalerkrankungen.https://www.g-ba.de/downloads/62-492-2784/RL-Z_Behandlung_2021-12-16_iK-2022-03-09.pdf (abgerufen: 17.03.2026).

[8] Horn A, Ludwig E (Hrsg.). Mundgesundheit in der Pflege: Grundlagen und interdisziplinäre Praxis auf Grundlage des Expertenstandards. 1. Auflage. Stuttgart: W. Kohlhammer (2025).

[9] KZBV & GKV-Spitzenverband. Bundesmantelvertrag Zahnärzte (BMV-Z, §3(2)): 1. https://www.kzbv.de/wp-content/uploads/bmv-z-2025-07-01-gesamtausgabe.pdf (abgerufen: 17.03.2026).

[10] Ludwig E. Kooperationsverträge – ein Erfolgsmodell! zm 2019; 109 (17): 1870-8.

[11] Ludwig E. Patientenbehandlung im Rahmen eines Kooperationsvertrags. zm 2019; 109 (18): 2022-31.

[12] Ludwig E. Kooperationsverträge zwischen Pflegeeinrichtungen und Zahnärzten – Wie gelingt die Implementierung in die Versorgungspraxis? SZM 2020; 8 (3): 147-52.

[13] Ludwig E: So gelingt die erfolgreiche Zusammenarbeit mit der Pflegeeinrichtung – Kooperationsverträge. Die junge Zahnmedizin 2025; 4: 22-25.

[14] Ludwig E. PAR-Behandlung bei Pflegebedürftigen und bei Menschen mit Behinderung. Quintessenz Team-Journal 2025; 2: 90-101.https://lzk-bw.de/fileadmin/user_upload/user_upload/PAR-Behandlung_bei_Patienten_nach___22a.pdf (abgerufen: 17.03.2026).

[15] Ludwig E. Update mund-pflege.net – was gibt es Neues? Quintessenz Zahnmedizin 2025; 11: 951-958.

[16] Ludwig E, Göbel V. Zahnmedizinische Versorgungskonzepte. In: Horn A, Ludwig E. (Hrsg.). Mundgesundheit in der Pflege: Grundlagen und interdisziplinäre Praxis auf Grundlage des Expertenstandards. 1. Auflage. Stuttgart: W. Kohlhammer: 149-156 (2025).

[17] Oberzaucher F. Pilotstudie zur zahnärztlichen Betreuung von Pflegeeinrichtungen nach Einführung von Kooperationsverträgen gemäß § 119b SGB V; 2015-2017. CAREkonkret; 18:8 (2018).

[18] Sirsch E, Ludwig E, Müller K, Blumenberg P, Nitschke I, Büscher A. Förderung der Mundgesundheit in der Pflege – ein interprofessioneller Expertenstandard. Zeitschrift für Gerontologie und Geriatrie 2022; 55: 204-209

Weiterführende Literatur:

Nitschke I, Wefers K P, Jockusch J. Mobile Zahnmedizin: die aufsuchende Betreuung. Quintessenz Verlag (2023).

ZMK 2026; 42 (4) S. 166-169

Prof. Dr. rer. nat. habil Cornelia Herbert

Gesunde Psyche, gesunder Mund, gesunde Zähne?

Psychologische Mundgesundheit

[1] FDI World Dental Federation. Definition of Oral Health. FDI Website. Abgerufen am 30.01.2026, https://www.fdiworlddental.org/fdis-definition-oral-health

[2] World Health Organization. Oral Health. WHO Website. Abgerufen am 30.01.2026, https://www.who.int/health-topics/oral-health/#tab=tab_1

[3] Herbert C. Wenn Mund und Psyche zusammenhängen. Psychosoziale Umschau. 2024; 38(4): 20-20.

[4] Deinzer R. In: Online Lehrbuch der Medizinischen Psychologie und Medizinischen Soziologie: 2.8.4. Psyche und Mundgesundheit, Berlin, Germany

[5] Ayer WA. Psychology and dentistry: mental health aspects of patient care, New York, United States, 2005.

[6] Hernández M, Rojas M. Psychological factors influencing oral health behaviors: A systematic review. Int J Dent Hyg. 2020; 18(1): 21-30.

[7] Duncan MJ, O'Brien K. Oral health-related quality of life: A systematic review of the literature. Community Dent Oral Epidemiol. 2018; 46(2): 143-154.

[8] Kumar S, Kaur M. The relationship between stress and oral health: A review. J Clin Psychol. 2021; 77(3): 489-496.

[9] Herbert C. Oral health and mental health in healthy adults, a topic of primary prevention and health care, empirical results from two online studies. Curr Psychol. 2023; 42(36): 32110-32124.

[10] Kuhr K, Sasunna D, Baudisch NF, Pitchika V, Zimmermann F, Ohm C, Jordan AR. 6. Deutsche Mundgesundheitsstudie (DMS•6): Datenverarbeitung und statistische Methoden.

[11] World Health Organization. (2022, 16. Juni). World Mental Health Report: Transforming Mental Health for All. WHO Website. Abgerufen am 30.01.2026.

[12] World Health Organization. (2025, 25. September). Noncommunicable diseases fact sheet. WHO Website. Abgerufen am 30.01.2026.

[13] Gonzalez JR, McCarthy R. Oral health and mental health: A systematic review of the literature. Psychol Health. 2019; 34(7): 765-785.

[14] Kisely S. No mental health without oral health. Can J Psychiatry. 2016; 61(5): 277-282.

[15] Turner E, Berry K, Aggarwal VR, Quinlivan L, Villanueva T, Palmier-Claus J. Oral health self-care behaviours in serious mental illness: A systematic review and meta-analysis. Acta Psychiatr Scand. 2022; 145(1): 29-41.

[16] Auerbacher M, Gebetsberger L, Kaisarly D, Schmidmaier R, Hickel R, Drey M. Oral health in patients with neurodegenerative and cerebrovascular disease: A retrospective study. Disabil Rehabil. 2023; 45(14): 2316-2324.

[17] Soiniemi L, Solje E, Suominen AL, Kanninen KM, Kullaa AM. The association between oral diseases and neurodegenerative disorders. J Alzheimers Dis. 2024; 102(3): 577-586.

[18] Herbert, C. Mund und Psyche: Psychologische Mundgesundheit – ein noch zu wenig beachtetes Gesundheitsthema mit Auswirkungen auf Prävention, Versorgung, Behandlung und Therapie zahnmedizinischer Patienten/-innen. Quintessence. 2025, 5; 6-17.

[19] Herbert C, Haas J. Psychologische-dentalhygienische Praxiskonzepte und assistive Assessmentools für die präventive Versorgung zahnärztlicher Patienten und Patientinnen und die Unterstützung der Therapieplanung, Behandlung und Adhärenz in der zahnärztlichen Praxis. Quintessenz. 2025, 55; 228-235.

[20] Gomez A, O'Connor P. The impact of stress on the oral microbiome: A review. Journal of Oral Microbiology. 2025. 12(1), 1842160.

[21] Zhang X, Li Y. The role of the oral microbiome in stress-related diseases: A review. Frontiers in Microbiology. 2020. 11, 1234.

[22] Herbert C, Kneipp R, Kapfer N, Buck C, Arnold R. Psychological factors affecting mental and oral health, and well-being. European Journal of Psychology Open. 2025. 84(Suppl. 1). https://doi.org/10.1024/2673-8627/a000085

[23] Herbert C. The influence of stress, emotions and psychological factors on oral health: A topic for primary prevention. European Journal of Psychology Open. 2025., 84(Suppl. 1) https://doi.org/10.1024/2673-8627/a000085

[24] Herbert C. (2025, März). Mund, Psyche, soziale Interaktion und Primärprävention. Psychologische Mundgesundheit. Von Nutzen und Wirkung in der Medizin - Frühjahrsakademie 24-27. 2025 März. https://www.uni-ulm.de/home/uni-aktuell/article/medizin-fruehjahrsakademie-2025/

[25] Herbert C. Wenn Mund und Psyche zusammenhängen. Psychosoziale Umschau. 2024. 38(4), 20-20.

[26] Herbert C. Psychologische Mundgesundheit. Projektwebsite. Abgerufen am 08.02.2026 https://www.anem-psych.com/oral-mental-health.

ZMK 2026; 42 (4) S. 170-185

Prof. Dr. Clemens Walter et al.

Strategien zur Vermeidung blutungsbedingter Komplikationen

Theorie und (Zahnarzt-)Praxis

1.) Armitage, G. C. Development of a classification system for periodontal diseases and conditions. Northwest. Dent. 2000, 79, 31-35.

2.) Walter C, Lienert N, Kleinmann F: Therapie einer aggressiven Parodontitis – unter besonderer Berücksichtigung einer gerinnungshemmenden Medikation. Zahnärztl Mitt. 2008; 98: 40-45

3.) Guerrero, A., Griffiths, G. S., Nibali, L., Suvan, J., Moles, D. R., Laurell, L. & Tonetti, M. S. Adjunctive benefits of systemic amoxicillin and metronidazole in non-surgical treatment of generalized aggressive periodontitis: a randomized placebo-controlled clinical trial. J Clin Periodontol. 2005, 32, 1096-1107.

4.) Van Winkelhoff, A. J., Rodenburg, J. P., Goene, R. J., Abbas, F., Winkel, E. G. & de, G. J. Metronidazole plus amoxycillin in the treatment of Actinobacillus actinomycetemcomitans associated periodontitis. J Clin Periodontol.1989, 16, 128-131.

5.) https://viamedici.thieme.de/lernmodul/549539/539520/Hämostase: Überblick - via medici, Zugriff am 2.10.2025

6.) https://de.wikipedia.org/ wiki/ Hämostase, Zugriff am 2.10.2025

7.) Gerd Herold und Mitarbeiter. Innere Medizin. 2025. ISBN 978-3-9821166-4-8

8.) S3 Leitlinie (Langversion): Zahnärztliche Chirurgie unter Antikoagulanzientherapie/Thrombozytenaggregationshemmern. AWMF-Registernummer: 083-018, Stand: August 2017, Gültig bis: August 2020 via. www.dgzmk.de, Zugriff am 1. 10. 2025

9.) Schindler C, Kirch W: Zahnärztl. Mitteilungen 2009, 99 (2). 42-44.

10.) Schwaiger M, Wallner J, Zemann W, Aichner S, Zrnc T, Metzler P: Application of tranexamic acid within the field of dentistry (in German). SWISS DENTAL JOURNAL SSO 2021: 131: 827–829.

11.) https://de.wikipedia.org/ wiki/ Wasserstoffperoxid, Zugriff am 3.10.2025

12.) https://de.wikipedia.org/ wiki/Acetylsalicylsäure, Zugriff am 3.10.2025

13.) Cordes V, Pischon N, Riess H, Dommisch H. Neue orale Antikoagulanzien in der zahnärztlichen Praxis. Parodontologie 2016; 27(1):9-15.

14.) Nesse W, Abbas F, van der Ploeg I, Spijkervet FK, Dijkstra PU, Vissink A. Periodontal inflamed surface area: quantifying inflammatory burden. J Clin Periodontol. 2008 Aug;35(8):668-73.

15.) Sanz M, Herrera D, Kebschull M, Chapple I, Jepsen S, Beglundh T, Sculean A, Tonetti MS; EFP Workshop Participants and Methodological Consultants. Treatment of stage I-

III periodontitis-The EFP S3 level clinical practice guideline. J Clin Periodontol. 2020 Jul;47 Suppl 22(Suppl 22):4-60.

16.) Stein JM, Yekta-Michael SS, Schittenhelm F, Reichert S, Kupietz D, Dommisch H, Kasaj A, Wied S, Vela OC, Stratul SI. Comparison of three full-mouth concepts for the non-surgical treatment of stage III and IV periodontitis: A randomized controlled trial. J Clin Periodontol. 2021 Dec;48(12):1516-1527.

17.) https://salk.at/analysen/, Zugriff am 3.10.2025

18.) https://de.wikipedia.org/ wiki/Glanzmann-Thrombasthenie, Zugriff am 3.10.2025

19.) https.//navigation-im-pvz.de/2025/03/08/mehrfach-chronisch-krank-multimorbidität-ist-im-alter-die-regel/, Zugriff am 4.10.2025

20.) Walter C, Büttel L, Weiger R. Localized alveolar ridge augmentation using a two-step approach with different soft tissue grafts: a clinical report. J Contemp Dent Pract. 2008 May 1;9(4):99-106.

21.) https://de.wikipedia.org/ wiki/Fibrinolyse, Zugriff am 5.10.2025

22.) https://webde.stago.com/haemostase/, Zugriff am 5.10.2025

23.) https://herzstiftung.de/service-und aktuelles/presse/pressemitteilungen/blutgerinnsel-verhindern-leitfaden, Zugriff am 5.10.2025

24.) Caton JG, Armitage G, Berglundh T, Chapple ILC, Jepsen S, Kornman KS, Mealey BL, Papapanou PN, Sanz M, Tonetti MS. A new classification scheme for periodontal and peri-implant diseases and conditions - Introduction and key changes from the 1999 classification. J Clin Periodontol. 2018 Jun;45 Suppl 20:S1-S8.

25.) Strauch KA, Robbins MR. Scaling and Root Planing in a Patient with Atherosclerosis, Arrhythmia, and Anticoagulation. Dent Clin North Am. 2023 Jul;67(3):393-396.

26.) Morgado-Sevillano D, Rodríguez-Molinero J, García-Bravo C, Peña-Cardelles JF, Ruiz-Roca JA, García-Guerrero I, Gómez-de Diego R. Oral surgery considerations in patients at high-risk of complications related to drug intake: A systematic review. Saudi Dent J. 2024 Dec;36(12):1503-1508.

27.) Gebrauchsinformation: Information für Anwender Eliquis 5mg Filmtabletten Apixaban, Stand, Juli 2025

28.) Greinacher A. Heparininduzierte Thrombozytopenie Dtsch Arztebl 2003; 100: A 2220–2229 [Heft 34–35]

29.) Graziani F, Cei S, Orlandi M, Gennai S, Gabriele M, Filice N, Nisi M, D'Aiuto F. Acute-phase response following full-mouth versus quadrant non-surgical periodontal treatment: A randomized clinical trial. J Clin Periodontol. 2015 Sep;42(9):843-852

30.) Hoang T, Dowdy RAE. Review of Inherited Coagulation Disorders. Anesth Prog. 2024 Jul 8;71(2):87-95.

31.) Gralnick HR, Sultan Y, Coller BS. Von Willebrand's disease: combined qualitative and quantitative abnormalities. N Engl J Med. 1977 May 5;296(18):1024-30.

32.) Santoshi RK, Patel R, Patel NS, Bansro V, Chhabra G. A Comprehensive Review of Thrombocytopenia With a Spotlight on Intensive Care Patients. Cureus. 2022 Aug 5;14(8):e27718.

33.) Mladěnka P, Macáková K, Kujovská Krčmová L, Javorská L, Mrštná K, Carazo A, Protti M, Remião F, Nováková L; OEMONOM researchers and collaborators. Vitamin K - sources, physiological role, kinetics, deficiency, detection, therapeutic use, and toxicity. Nutr Rev. 2022 Mar 10;80(4):677-698.

34.) Gando S, Levi M, Toh CH. Disseminated intravascular coagulation. Nat Rev Dis Primers. 2016 Jun 2;2:16037.

35.) Caldwell, Stephen M.D., F.A.A.S.L.D.*,1; Carlini, Lauren Evers M.D.1. Coagulation Homeostasis in Liver Disease. Clinical Liver Disease 16(4):p 137-141, October 2020.

36.) Harrison MF. The Misunderstood Coagulopathy of Liver Disease: A Review for the Acute Setting. West J Emerg Med. 2018 Sep;19(5):863-871.

37.) Dézsi CA, Dézsi BB, Dézsi AD. Management of dental patients receiving antiplatelet therapy or chronic oral anticoagulation: A review of the latest evidence. Eur J Gen Pract. 2017 Dec;23(1):196-201. doi: 10.1080/13814788.2017.1350645.

38.) Botero JP, Lee K, Branchford BR, Bray PF, Freson K, Lambert MP, Luo M, Mohan S, Ross JE, Bergmeier W, Di Paola J; ClinGen Platelet Disorder Variant Curation Expert Panel. Glanzmann thrombasthenia: genetic basis and clinical correlates. Haematologica. 2020 Apr;105(4):888-894.

39.) Fakhri HR, Janket SJ, Jackson EA, Baird AE, Dinnocenzo R, Meurman JH. Tutorial in oral antithrombotic therapy: Biology and dental implications. Med Oral Patol Oral Cir Bucal. 2013 May 1;18 (3):e461-72.

40.) Abdullah WA, Khalil H. Dental extraction in patients on warfarin treatment. Clin Cosmet Investig Dent. 2014 Aug 19;6:65-9.

41.) Bakathir AA. Minor Oral Surgery Procedures in Patients Taking Warfarin: A 5-year retrospective study at Sultan Qaboos University Hospital, Sultanate of Oman. Sultan Qaboos Univ Med J. 2009 Dec;9(3):279-86.

42.) Ozyilmaz OD, Gundogdu S, Alkan A. Attitude and practice of dentists in patients taking oral antiplatelet and anticoagulant medications. BMC Oral Health. 2025 Apr 20;25(1):606.

43.) Schrör K. Aspirin and platelets: the antiplatelet action of aspirin and its role in thrombosis treatment and prophylaxis. Semin Thromb Hemost. 1997;23(4):349-56.

44.) Fontana P, Zufferey A, Daali Y, Reny JL. Antiplatelet therapy: targeting the TxA2 pathway. J Cardiovasc Transl Res. 2014 Feb;7(1):29-38.

45.) Rucker D, Dhamoon AS. Physiology, Thromboxane A2. [Updated 2022 Sep 12]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK539817/

46.) Oprea AD, Popescu WM. P2Y12 Receptor Inhibitors in Acute Coronary Syndromes: What Is New on the Horizon? Cardiol Res Pract. 2013;2013:195456.

47.) Koski R, Kennedy B. Comparative Review of Oral P2Y12 Inhibitors. P T. 2018 Jun;43(6):352-357. PMID: 29896034; PMCID: PMC5969212.

48.) Siller-Matula JM, Krumphuber J, Jilma B. Pharmacokinetic, pharmacodynamic and clinical profile of novel antiplatelet drugs targeting vascular diseases. Br J Pharmacol. 2010 Feb 1;159(3):502-17.

49.) Shixuan Liu, Guomin Shen, Weikai Li,Structural and cellular basis of vitamin K antagonism, Journal of Thrombosis and Haemostasis, Volume 20, Issue 9, 2022, Pages 1971-1983, ISSN 1538-7836

50.) Lindhoff-Last, Edelgard & Birschmann, Ingvild & Bidenharn, Antonia & Kuhn, Joachim & Lindau, Simone & Konstantinides, Stavros & Grottke, Oliver & Nowak-Göttl, Ulrike & Lucks, Jessica & Zydek, B. & von Heymann, Christian & Sümnig, A. & Beyer-westendorf, Jan & Schellong, Sebastian & Meybohm, Patrick & Greinacher, Andreas & Herrmann, Eva. (2022). Pharmacokinetics of Phenprocoumon in Emergency Situations–Results of the Prospective Observational RADOA-Registry (Reversal Agent Use in Patients Treated with Direct Oral Anticoagulants or Vitamin K Antagonists Registry). Pharmaceuticals. 15. 1437. 10.3390/ph15111437.

51.) Altiok, E; Marx, N. Oral Anticoagulation: Update on anticoagulation with vitamin K antagonists and non–vitamin K–dependent oral anticoagulants. Dtsch Arztebl Int 2018; 115: 776-83.

52.) Chan, Noel et al., Direct oral anticoagulants: evidence and unresolved issues The Lancet, Volume 396, Issue 10264, 1767 – 1776

53.) Dunois C. Laboratory Monitoring of Direct Oral Anticoagulants (DOACs). Biomedicines. 2021 Apr 21;9(5):445. doi: 10.3390/biomedicines9050445. PMID: 33919121; PMCID: PMC8143174.

54.) Hirsh J, Warkentin TE, Shaughnessy SG, Anand SS, Halperin JL, Raschke R, Granger C, Ohman EM, Dalen JE. Heparin and low-molecular-weight heparin: mechanisms of action, pharmacokinetics, dosing, monitoring, efficacy, and safety. Chest. 2001 Jan;119(1 Suppl):64S-94S.

55.) Jack Hirsh, Theodore E. Warkentin, Stephen G. Shaughnessy, Sonia S. Anand, Jonathan L. Halperin, Robert Raschke, Christopher Granger, E. Magnus Ohman, James E. Dalen, Heparin and Low-Molecular-Weight Heparin Mechanisms of Action, Pharmacokinetics, Dosing, Monitoring, Efficacy, and Safety,Chest, Volume 119, Issue 1, Supplement, 2001, Pages 64S-94S, ISSN 0012-3692

56.) Patel P, Varacallo MA. Low-Molecular-Weight Heparin (LMWH) [Updated 2025 Mar 28]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK525957/

57.) Hirsh, J., Anand, S. S., Halperin, J. L., & Fuster, V. (2001). Guide to Anticoagulant Therapy: Heparin. Circulation, 103(24), 2994.

58.) https: de. Wikipedia.org/wiki/off-label-use, Zugriff am 27.03.2026

59.) Reus JH. Gewebekleber im Einsatz bei Gesichtsverletzungen. Face. 2009.1:43-45;

60.) Narsingyani RG, Patel SM, Sood RA, Bhimani KK, Makwana SV, Savani RR. Attached Oral Mucosal Wound Closure using Blue Glue - A Prospective Clinical Study. Ann Maxillofac Surg. 2023 Jan-Jun;13(1):31-36.

61.) Walter C, Müller AA, Schmidt JC. Hirnabszess als lebensbedrohliche Komplikation einer unbehandelten schweren Parodontitis? Parodontologie. 2019 (4):367-387.

62.) Tavelli L, Barootchi S, Ravidà A, Oh TJ, Wang HL. What Is the Safety Zone for Palatal Soft Tissue Graft Harvesting Based on the Locations of the Greater Palatine Artery and Foramen? A Systematic Review. J Oral Maxillofac Surg. 2019 Feb;77(2):271.e1-271.e9.

63.) DGI, DGZMK: „Relevanz der Vitamin D-Bestimmung und -Supplementierung auf die Implantatprognose und Augmentationschirurgie“, Langfassung, Version 1.0, 2025, AWMF-Registriernummer: 083-055, https://register.awmf.org/de/leitlinien/detail/083-055, (Zugriff am: 16.02.2026)

64.) Walter C, Fritzke A, Kaner D. Vitamin D in parodontaler und implantologischer Diagnostik und Therapie – Wo stehen wir heute? 2026 (1):203-222.

65.) APOTHEKE ADHOC. Vitamin D und K: Keine verlässliche Empfehlung möglich.31.03.2025 15:13 Uhr, Zugriff am 28.03.2026

66.) Aaseth JO, Finnes TE, Askim M, Alexander J. The Importance of Vitamin K and the Combination of Vitamins K and D for Calcium Metabolism and Bone Health: A Review. Nutrients. 2024 Jul 25;16(15):2420.

67.) Bundesinstitut für Risikobewertung (BfR). Vitamin D und K. Stellungnahme 31/2025. vom 3. September 2025, Aktualisierung 29.10.2025

ZMK 2026; 42 (4) S. 186-187

Dental aktuell / Listerine

Mehr parodontale Erkrankungen trotz guter Vorsorgemöglichkeiten

[1] Schwendicke F, Dörfer C, Jordan AR et al., „Parodontale Erkrankungen in Deutschland – Ergebnisse aus der Sechsten Deutschen Mundgesundheitsstudie (DMS 6)“. In: Deutsche Zahnärztliche Zeitschrift (DZZ) 2025; pp. 102–121.

[2] ZWP Online, 2025. Zähneputzen im Realitätscheck: fleißig, aber oft nicht gründlich genug. [Online] verfügbar unter: https://www.zwp-online.info/zwpnews/dental-news/branchenmeldungen/das-zahneputzen-auf-dem-prufstand-der-wissenschaft. [Zugriff am 16.12.2025].

[3] S3-Leitlinie: Häusliches mechanisches Biofilmmanagement in der Prävention und Therapie der Gingivitis. AWMF-Registernummer: 083-022, Stand: November 2018, Amendment: Dezember 2020.

[4] S3-Leitlinie: Häusliches chemisches Biofilmmanagement in der Prävention und Therapie der Gingivitis. AWMF-Registernummer: 083-016, Stand: November 2018, Amendment: Dezember 2020.

[5] Kenvue.Interdental Brush + Essential Oil Mouthrinse Study (IDB Study). Clinical Summary Report. Kenvue Medical Affairs; 2024.The full clinical study manuscript has been submitted for publication. The secondary endpoints from the study were published at (Preshaw, PM et al. Periodontal Bleeding and Probing-Depth Outcomes with Interdental Brushing and Mouthwash (Oral Presentation) J Dent Res Vol 104 B / International Association of Dental Research (IADR). 2025. Barcelona, Spain).

[6] Principles for Oral Health. SEPA 2024. Available at: www.principlesfororalhealth.com. Abgerufen am 16 April 2025

[7] Sanz M, Herrera D, Kebschull M, et al. Treatment of stage I-III periodontitis-The EFP S3 level clinical practice guideline. J Clin Periodontol. 2020;47 Suppl 22(Suppl 22):4-60.

[8] Johnson & Johnson internal study: FCLGBP0048. Johnson & Johnson 2022

[9] Minah GE, et al. Effects of 6 months use of an antiseptic mouthrinse on supragingival dental plaque microflora. J Clin Periodontol 1989; 16:347-352

[10] Charles CH, Mostler KM, Bartels LL, Mankodi SM. Comparative antiplaque and antigingivitis effectiveness of a chlorhexidine and an essential oil mouthrinse: 6-month clinical trial. J Clin Periodontol. 2004 Oct;31(10):878-84.