

Behandlung frühkindlicher Karies mittels Silberdiaminfluorid

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1. Abdullah, N., Al Marzooq, F., Mohamad, S., Abd Rahman, N., Rani, K. G. A., Chi Ngo, H., & Samaranayake, L. P. (2020). The antibacterial efficacy of silver diamine fluoride (SDF) is not modulated by potassium iodide (KI) supplements: A study on in-situ plaque biofilms using viability real-time PCR with propidium monoazide. *PLoS ONE*, 15(11), e0241519. <https://doi.org/10.1371/journal.pone.0241519>
2. Benjamin, R. M. (2010). Oral Health: The Silent Epidemic. *Public Health Reports*, 125(2), 158–159. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2821841/>
3. Casamassimo, P. S., Thikkurissy, S., Edelstein, B. L., & Maiorini, E. (2009). Beyond the dmft: The Human and Economic Cost of Early Childhood Caries. *The Journal of the American Dental Association*, 140(6), 650–657. <https://doi.org/10.14219/jada.archive.2009.0250>
4. Chibinski, A. C., Wambier, L. M., Feltrin, J., Loguercio, A. D., Wambier, D. S., & Reis, A. (2017). Silver Diamine Fluoride Has Efficacy in Controlling Caries Progression in Primary Teeth: A Systematic Review and Meta-Analysis. *Caries Research*, 51(5), 527–541. <https://doi.org/10.1159/000478668>
5. Chu, C. H., Lo, E. C. M., & Lin, H. C. (2002). Effectiveness of silver diamine fluoride and sodium fluoride varnish in arresting dentin caries in Chinese pre-school children. *Journal of Dental Research*, 81(11), 767–770. <https://doi.org/10.1177/0810767>
6. Crystal, Y. O., Janal, M. N., Hamilton, D. S., & Niederman, R. (2017). Parental perceptions and acceptance of silver diamine fluoride staining. *The Journal of the American Dental Association*, 148(7), 510-518.e4. <https://doi.org/10.1016/j.adaj.2017.03.013>
7. Crystal, Y. O., Marghalani, A. A., Ureles, S. D., Wright, J. T., Sulyanto, R., Divaris, K., Fontana, M., & Graham, L. (2017, October). Use of Silver Diamine Fluoride for Dental Caries Management in Children and Adolescents, Including Those with Special Health Care Needs [Text]. American Academy of Pediatric Dentistry. <https://www.ingentaconnect.com/contentone/aapd/pd/2017/00000039/00000005/art00014#>
8. Crystal, Y. O., & Niederman, R. (2019). Evidence-Based Dentistry Update on Silver Diamine Fluoride. *Dental Clinics of North America*, 63(1), 45–68. <https://doi.org/10.1016/j.cden.2018.08.011>
9. Dorri, M., Martinez-Zapata, M. J., Walsh, T., Marinho, V. C., Sheiham Deceased, A., & Zaror, C. (2017). Atraumatic restorative treatment versus conventional restorative

- treatment for managing dental caries. *The Cochrane Database of Systematic Reviews*, 12, CD008072. <https://doi.org/10.1002/14651858.CD008072.pub2>
10. Duangthip, D., Fung, M. H. T., Wong, M. C. M., Chu, C. H., & Lo, E. C. M. (2018). Adverse Effects of Silver Diamine Fluoride Treatment among Preschool Children. *Journal of Dental Research*, 97(4), 395–401. <https://doi.org/10.1177/0022034517746678>
 11. Frencken, J. E., Leal, S. C., & Navarro, M. F. (2012). Twenty-five-year atraumatic restorative treatment (ART) approach: A comprehensive overview. *Clinical Oral Investigations*, 16(5), 1337–1346. <https://doi.org/10.1007/s00784-012-0783-4>
 12. Fröhlich, T. T., Botton, G., & Rocha, R. de O. (2022). Bonding of Glass-Ionomer Cement and Adhesives to Silver Diamine Fluoride-treated Dentin: An Updated Systematic Review and Meta-Analysis. *The Journal of Adhesive Dentistry*, 24(1), 29–38. <https://doi.org/10.3290/j.jad.b2701679>
 13. Fröhlich, T. T., Rocha, R. de O., & Botton, G. (2020). Does previous application of silver diammine fluoride influence the bond strength of glass ionomer cement and adhesive systems to dentin? Systematic review and meta-analysis. *International Journal of Paediatric Dentistry*, 30(1), 85–95. <https://doi.org/10.1111/ipd.12571>
 14. Gao, S. S., Zhao, I. S., Hiraishi, N., Duangthip, D., Mei, M. L., Lo, E. C. M., & Chu, C. H. (2016). Clinical Trials of Silver Diamine Fluoride in Arresting Caries among Children: A Systematic Review. *JDR Clinical & Translational Research*, 1(3), 201–210. <https://doi.org/10.1177/2380084416661474>
 15. Greenwall-Cohen, J., Greenwall, L., & Barry, S. (2020). Silver diamine fluoride—An overview of the literature and current clinical techniques. *British Dental Journal*, 228(11), 831–838. <https://doi.org/10.1038/s41415-020-1641-4>
 16. Hendre, A. D., Taylor, G. W., Chávez, E. M., & Hyde, S. (2017). A systematic review of silver diamine fluoride: Effectiveness and application in older adults. *Gerodontics*, 34(4), 411–419. <https://doi.org/10.1111/ger.12294>
 17. Heng, C. (2016). Tooth Decay Is the Most Prevalent Disease. *Federal Practitioner*, 33(10), 31–33. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6373711/>
 18. Horst, J. A., Ellenikotis, H., & Milgrom, P. M. (2016). UCSF Protocol for Caries Arrest Using Silver Diamine Fluoride: Rationale, Indications, and Consent. *Journal of the California Dental Association*, 44(1), 16–28. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4778976/>
 19. Horst, J. A., Tanzer, J. M., & Milgrom, P. M. (2018). Fluorides and Other Preventive Strategies for Tooth Decay. *Dental Clinics of North America*, 62(2), 207–234. <https://doi.org/10.1016/j.cden.2017.11.003>
 20. Innes, N. P. T., Ricketts, D., Chong, L. Y., Keightley, A. J., Lamont, T., & Santamaria,

- R. M. (2015). Preformed crowns for decayed primary molar teeth. The Cochrane Database of Systematic Reviews, 12, CD005512.
<https://doi.org/10.1002/14651858.CD005512.pub3>
21. Jiang, M., Mei, M. L., Wong, M. C. M., Chu, C. H., & Lo, E. C. M. (2020). Effect of silver diamine fluoride solution application on the bond strength of dentine to adhesives and to glass ionomer cements: A systematic review. BMC Oral Health, 20(1), 40. <https://doi.org/10.1186/s12903-020-1030-z>
22. Kupietzky, A., Waggoner, W. F., & Galea, J. (2005, June). Long-term Photographic and Radiographic Assessment of Bonded Resin Composite Strip Crowns for Primary Incisors: Results After 3 Years [Text]. American Academy of Pediatric Dentistry. <https://www.ingentaconnect.com/content/aapd/pd/2005/00000027/00000003/art00008#>
23. Li, R., Lo, E. C. M., Liu, B. Y., Wong, M. C. M., & Chu, C. H. (2016). Randomized clinical trial on arresting dental root caries through silver diammine fluoride applications in community-dwelling elders. Journal of Dentistry, 51, 15–20. <https://doi.org/10.1016/j.jdent.2016.05.005>
24. Listl, S., Galloway, J., Mossey, P. A., & Marcenes, W. (2015). Global Economic Impact of Dental Diseases. Journal of Dental Research, 94(10), 1355–1361. <https://doi.org/10.1177/0022034515602879>
25. Llodra, J. C., Rodriguez, A., Ferrer, B., Menardia, V., Ramos, T., & Morato, M. (2005). Efficacy of silver diamine fluoride for caries reduction in primary teeth and first permanent molars of schoolchildren: 36-month clinical trial. Journal of Dental Research, 84(8), 721–724. <https://doi.org/10.1177/154405910508400807>
26. Mei, M. L., Chu, C. H., Lo, E. C. M., & Samaranayake, L. P. (2013). Fluoride and silver concentrations of silver diammine fluoride solutions for dental use. International Journal of Paediatric Dentistry, 23(4), 279–285. <https://doi.org/10.1111/ipd.12005>
27. Midani, R., Splieth, C. H., Mustafa Ali, M., Schmoeckel, J., Mourad, S. M., & Santamaria, R. M. (2019). Success rates of preformed metal crowns placed with the modified and standard hall technique in a paediatric dentistry setting. International Journal of Paediatric Dentistry, 29(5), 550–556. <https://doi.org/10.1111/ipd.12495>
28. Neue Empfehlungen für Kinderzahnpasten mit Fluorid | dgpzm. (n.d.). Retrieved May 3, 2020, from <https://www.dgpzm.de/neue-empfehlungen-fuer-kinderzahnpasten-mit-fluorid>
29. Nyvad, B., & Baelum, V. (2018). Nyvad Criteria for Caries Lesion Activity and Severity Assessment: A Validated Approach for Clinical Management and Research. Caries Research, 52(5), 397–405. <https://doi.org/10.1159/000480522>
30. Nyvad, B., Machiulskiene, V., & Baelum, V. (1999). Reliability of a new caries

- diagnostic system differentiating between active and inactive caries lesions. *Caries Research*, 33(4), 252–260. <https://doi.org/10.1159/000016526>
31. Oliveira, B. H., Rajendra, A., Veitz-Keenan, A., & Niederman, R. (2019). The Effect of Silver Diamine Fluoride in Preventing Caries in the Primary Dentition: A Systematic Review and Meta-analysis. *Caries Research*, 53(1), 24–32. <https://doi.org/10.1159/000488686>
 32. Righolt, A. J., Jevdjovic, M., Marques, W., & Listl, S. (2018). Global-, Regional-, and Country-Level Economic Impacts of Dental Diseases in 2015. *Journal of Dental Research*, 97(5), 501–507. <https://doi.org/10.1177/0022034517750572>
 33. Rosenblatt, A., Stamford, T. C. M., & Niederman, R. (2009). Silver Diamine Fluoride: A Caries “Silver-Fluoride Bullet.” *Journal of Dental Research*, 88(2), 116–125. <https://doi.org/10.1177/0022034508329406>
 34. Santamaría, R., & Innes, N. (2018). Sealing Carious Tissue in Primary Teeth Using Crowns: The Hall Technique. *Monographs in Oral Science*, 27, 113–123. <https://doi.org/10.1159/000487835>
 35. Santamaria, R. M., Schmoeckel, J., Basner, R., Schüler, E., & Splieth, C. H. (2019). Caries Trends in the Primary Dentition of 6- to 7-Year-old Schoolchildren in Germany from 1994 to 2016: Results from the German National Oral Health Surveys in Children. *Caries Research*, 53(6), 659–666. <https://doi.org/10.1159/000500854>
 36. Schmoeckel, J., Gorseta, K., Splieth, C. H., & Juric, H. (2020). How to Intervene in the Caries Process: Early Childhood Caries - A Systematic Review. *Caries Research*, 54(2), 102–112. <https://doi.org/10.1159/000504335>
 37. Seifo, N., Cassie, H., Radford, J. R., & Innes, N. P. T. (2019). Silver diamine fluoride for managing carious lesions: An umbrella review. *BMC Oral Health*, 19(1), 145. <https://doi.org/10.1186/s12903-019-0830-5>
 38. Séllos, M. C., & Soviero, V. M. (2011). Reliability of the Nyvad criteria for caries assessment in primary teeth. *European Journal of Oral Sciences*, 119(3), 225–231. <https://doi.org/10.1111/j.1600-0722.2011.00827.x>
 39. Slayton, R. L., Urquhart, O., Araujo, M. W. B., Fontana, M., Guzmán-Armstrong, S., Nascimento, M. M., Nový, B. B., Tinanoff, N., Weyant, R. J., Wolff, M. S., Young, D. A., Zero, D. T., Tampi, M. P., Pilcher, L., Banfield, L., & Carrasco-Labra, A. (2018). Evidence-based clinical practice guideline on nonrestorative treatments for carious lesions: A report from the American Dental Association. *The Journal of the American Dental Association*, 149(10), 837-849.e19. <https://doi.org/10.1016/j.adaj.2018.07.002>
 40. Takahashi, M., Matin, K., Matsui, N., Shimizu, M., Tsuda, Y., Uchinuma, S., Hiraishi, N., Nikaido, T., & Tagami, J. (2021). Effects of silver diamine fluoride preparations on biofilm formation of *Streptococcus mutans*. *Dental Materials Journal*, 40(4), 911–917.

<https://doi.org/10.4012/dmj.2020-341>

41. Toopchi, S., Bakhurji, E., Loo, C. Y., & Hassan, M. (2021). Effect of Light Curing on Silver Diamine Fluoride in Primary Incisors: A Microscopic Ex Vivo Study. *Pediatric Dentistry*, 43(1), 44–49.
42. Turton, B., Horn, R., & Durward, C. (2021). Caries arrest and lesion appearance using two different silver fluoride therapies on primary teeth with and without potassium iodide: 12-month results. *Clinical and Experimental Dental Research*, 7(4), 609–619. <https://doi.org/10.1002/cre2.367>
43. Van Duker, M., Hayashi, J., Chan, D. C., Tagami, J., & Sadr, A. (2019). Effect of silver diamine fluoride and potassium iodide on bonding to demineralized dentin. *American Journal of Dentistry*, 32(3), 143–146.
44. Vinson, L. A., Gilbert, P. R., Sanders, B. J., Moser, E., & Gregory, R. L. (2018). Silver Diamine Fluoride and Potassium Iodide Disruption of In Vitro *Streptococcus mutans* Biofilm. *Journal of Dentistry for Children (Chicago, Ill.)*, 85(3), 120–124.
45. Wu, D. I., Velamakanni, S., Denisson, J., Yaman, P., Boynton, J. R., & Papagerakis, P. (2016). Effect of Silver Diamine Fluoride (SDF) Application on Microtensile Bonding Strength of Dentin in Primary Teeth. *Pediatric Dentistry*, 38(2), 148–153.
46. Zaeneldin, A., Yu, O. Y., & Chu, C.-H. (2022). Effect of silver diamine fluoride on vital dental pulp: A systematic review. *Journal of Dentistry*, 119, 104066. <https://doi.org/10.1016/j.jdent.2022.104066>
47. Zhang, J., Got, S.-R., Yin, I. X., Lo, E. C.-M., & Chu, C.-H. (2021). A Concise Review of Silver Diamine Fluoride on Oral Biofilm. *Applied Sciences*, 11(7), 3232. <https://doi.org/10.3390/app11073232>
48. Zhao, I. S., Chu, S., Yu, O. Y., Mei, M. L., Chu, C. H., & Lo, E. C. M. (2019). Effect of silver diamine fluoride and potassium iodide on shear bond strength of glass ionomer cements to caries-affected dentine. *International Dental Journal*, 69(5), 341–347. <https://doi.org/10.1111/idj.12478>
49. Zhao, I. S., Gao, S. S., Hiraishi, N., Burrow, M. F., Duangthip, D., Mei, M. L., Lo, E. C.-M., & Chu, C.-H. (2018). Mechanisms of silver diamine fluoride on arresting caries: A literature review. *International Dental Journal*, 68(2), 67–76. <https://doi.org/10.1111/idj.12320>

Wirksamkeit von Versiegeln und Adhäsiven zur Reduktion der Entstehung von Schmelzkaries während der kieferorthopädischen Behandlung mit Brackets.

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Literaturliste:

1. Ahovuo-Saloranta, A., et al., *Pit and fissure sealants for preventing dental decay in permanent teeth*. Cochrane Database Syst Rev, 2017. 7(7): p. Cd001830.
2. Alabdullah, M.M., et al., *Effect of fluoride-releasing resin composite in white spot lesions prevention: a single-centre, split-mouth, randomized controlled trial*. Eur J Orthod, 2017. 39(6): p. 634-640.
3. Alshammari, F.M. and J.A. Sanea, *Efficacy of Amorphous Calcium Phosphate (ACP) Containing Adhesive in Preventing Demineralization during Orthodontic Treatment, a Triple Blinded Randomized Clinical Trial (RCT)*. J Contemp Dent Pract, 2019. 20(6): p. 727-731.
4. Artun, J. and B.O. Brobakken, *Prevalence of carious white spots after orthodontic treatment with multibonded appliances*. Eur J Orthod, 1986. 8(4): p. 229-34.
5. Bailey, D.L., et al., *Regression of post-orthodontic lesions by a remineralizing cream*. J Dent Res, 2009. 88(12): p. 1148-53.
6. Banks, P.A., A. Burn, and K. O'Brien, *A clinical evaluation of the effectiveness of including fluoride into an orthodontic bonding adhesive*. Eur J Orthod, 1997. 19(4): p. 391-5.
7. Banks, P.A. and S. Richmond, *Enamel sealants: a clinical evaluation of their value during fixed appliance therapy*. Eur J Orthod, 1994. 16(1): p. 19-25.
8. Benham, A.W., P.M. Campbell, and P.H. Buschang, *Effectiveness of pit and fissure sealants in reducing white spot lesions during orthodontic treatment. A pilot study*. Angle Orthod, 2009. 79(2): p. 338-45.
9. Benson, P.E., et al., *Fluorides for preventing early tooth decay (demineralised lesions) during fixed brace treatment*. Cochrane Database Syst Rev, 2019. 2019(11).
10. Bock, N.C., et al., *Changes in white spot lesions following post-orthodontic weekly application of 1.25 per cent fluoride gel over 6 months-a randomized placebo-controlled clinical trial. Part I: photographic data evaluation*. Eur J Orthod, 2017. 39(2): p. 134-143.
11. Boersma, J.G., et al., *Caries prevalence measured with QLF after treatment with fixed orthodontic appliances: influencing factors*. Caries Res, 2005. 39(1): p. 41-7.
12. Bourouni, S., et al., *Efficacy of resin infiltration to mask post-orthodontic or non-post-orthodontic white spot lesions or fluorosis - a systematic review and meta-analysis*. Clin Oral Investig, 2021.
13. Chung, C.K., et al., *Fluoride release and cariostatic ability of a compomer and a resin-modified glass ionomer cement used for orthodontic bonding*. J Dent, 1998. 26(5-6): p. 533-8.
14. Comert, S. and A.A. Oz, *Clinical effect of a fluoride-releasing and rechargeable primer in reducing white spot lesions during orthodontic treatment*. Am J Orthod Dentofacial Orthop, 2020. 157(1): p. 67-72.
15. Cury, J.A., et al., *Are fluoride releasing dental materials clinically effective on caries control?* Dent Mater, 2016. 32(3): p. 323-33.
16. Davey Smith, G. and M. Egger, *Meta-analysis. Unresolved issues and future developments*. BMJ, 1998. 316(7126): p. 221-5.
17. Fornell, A.C., et al., *Effect of a hydrophobic tooth coating on gingival health, mutans streptococci, and enamel demineralization in adolescents with fixed orthodontic appliances*. Acta Odontol Scand, 2002. 60(1): p. 37-41.

18. Ghiz, M.A., et al., *Effects of sealant and self-etching primer on enamel decalcification. Part II: an in-vivo study*. Am J Orthod Dentofacial Orthop, 2009. 135(2): p. 206-13.
19. Gorelick, L., A.M. Geiger, and A.J. Gwinnett, *Incidence of white spot formation after bonding and banding*. Am J Orthod, 1982. 81(2): p. 93-8.
20. Guyatt, G.H., et al., *GRADE: an emerging consensus on rating quality of evidence and strength of recommendations*. BMJ, 2008. 336(7650): p. 924-6.
21. Hammad, S.M. and M. Knosel, *Efficacy of a new sealant to prevent white spot lesions during fixed orthodontic treatment : A 12-month, single-center, randomized controlled clinical trial*. J Orofac Orthop, 2016. 77(6): p. 439-445.
22. Heinig, N. and A. Hartmann, *Efficacy of a sealant : study on the efficacy of a sealant (Light Bond) in preventing decalcification during multibracket therapy*. J Orofac Orthop, 2008. 69(3): p. 154-67.
23. Heymann, G.C. and D. Grauer, *A contemporary review of white spot lesions in orthodontics*. J Esthet Restor Dent, 2013. 25(2): p. 85-95.
24. Higgins, J.P.T. and S.G. Green, *Cochrane Handbook for Systematic Reviews of Interventions. Version 5. 10 [updated March 2011]. The Cochrane Collaboration*. Available from www.cochrane-handbook.org. 2011.
25. Hu, H., et al., *Effectiveness of remineralizing agents in the prevention and reversal of orthodontically induced white spot lesions: a systematic review and network meta-analysis*. Clin Oral Investig, 2020. 24(12): p. 4153-4167.
26. Kamber, R., et al., *Efficacy of sealants and bonding materials during fixed orthodontic treatment to prevent enamel demineralization: a systematic review and meta-analysis*. Sci Rep, 2021. 11(1): p. 16556.
27. Kidd, E.A. and O. Fejerskov, *What constitutes dental caries? Histopathology of carious enamel and dentin related to the action of cariogenic biofilms*. J Dent Res, 2004. 83 Spec No C: p. C35-8.
28. Knösel, M., et al., *External bleaching effect on the color and luminosity of inactive white-spot lesions after fixed orthodontic appliances*. Angle Orthod, 2007. 77(4): p. 646-52.
29. Knosel, M., et al., *In-vivo durability of a fluoride-releasing sealant (OpalSeal) for protection against white-spot lesion formation in orthodontic patients*. Head Face Med, 2015. 11: p. 11.
30. Krois, J., et al., *Sealing or infiltrating proximal carious lesions*. J Dent, 2018. 74: p. 15-22.
31. Kumar Jena, A., S. Pal Singh, and A. Kumar Utreja, *Efficacy of resin-modified glass ionomer cement varnish in the prevention of white spot lesions during comprehensive orthodontic treatment: a split-mouth study*. J Orthod, 2015. 42(3): p. 200-7.
32. Leizer, C., et al., *Efficacy of a filled-resin sealant in preventing decalcification during orthodontic treatment*. Am J Orthod Dentofacial Orthop, 2010. 137(6): p. 796-800.
33. Millett, D.T., et al., *A comparative clinical trial of a compomer and a resin adhesive for orthodontic bonding*. Angle Orthod, 2000. 70(3): p. 233-40.
34. O'Reilly, M.T., J. De Jesus Vinas, and J.P. Hatch, *Effectiveness of a sealant compared with no sealant in preventing enamel demineralization in patients with fixed orthodontic appliances: a prospective clinical trial*. Am J Orthod Dentofacial Orthop, 2013. 143(6): p. 837-44.
35. Ogaard, B., *Prevalence of white spot lesions in 19-year-olds: a study on untreated and orthodontically treated persons 5 years after treatment*. Am J Orthod Dentofacial Orthop, 1989. 96(5): p. 423-7.
36. Ogaard, B., G. Rolla, and J. Arends, *Orthodontic appliances and enamel demineralization. Part 1. Lesion development*. Am J Orthod Dentofacial Orthop, 1988. 94(1): p. 68-73.
37. Richter, A.E., et al., *Incidence of caries lesions among patients treated with comprehensive orthodontics*. Am J Orthod Dentofacial Orthop, 2011. 139(5): p. 657-64.
38. Robertson, M.A., et al., *MI Paste Plus to prevent demineralization in orthodontic patients: a prospective randomized controlled trial*. Am J Orthod Dentofacial Orthop, 2011. 140(5): p. 660-8.

39. Sardana, D., et al., *Effectiveness of professional fluorides against enamel white spot lesions during fixed orthodontic treatment: A systematic review and meta-analysis*. J Dent, 2019. 82: p. 1-10.
40. Shafi, I., *Fluoride varnish reduces white spot lesions during orthodontic treatment*. Evid Based Dent, 2008. 9(3): p. 81.
41. Trimpeneers, L.M. and L.R. Dermaut, *A clinical evaluation of the effectiveness of a fluoride-releasing visible light-activated bonding system to reduce demineralization around orthodontic brackets*. Am J Orthod Dentofacial Orthop, 1996. 110(2): p. 218-22.
42. Tufekci, E., et al., *Prevalence of white spot lesions during orthodontic treatment with fixed appliances*. Angle Orthod, 2011. 81(2): p. 206-10.
43. Tufekci, E., et al., *Efficacy of a fluoride-releasing orthodontic primer in reducing demineralization around brackets: an in-vivo study*. Am J Orthod Dentofacial Orthop, 2014. 146(2): p. 207-14.
44. Turner, P.J., *The clinical evaluation of a fluoride-containing orthodontic bonding material*. Br J Orthod, 1993. 20(4): p. 307-13.
45. Wenderoth, C.J., M. Weinstein, and A.J. Borislow, *Effectiveness of a fluoride-releasing sealant in reducing decalcification during orthodontic treatment*. Am J Orthod Dentofacial Orthop, 1999. 116(6): p. 629-34.
46. Wisth, P.J. and A. Nord, *Caries experience in orthodontically treated individuals*. Angle Orthod, 1977. 47(1): p. 59-64.
47. Zantner, C., P. Martus, and A.M. Kielbassa, *Clinical monitoring of the effect of fluorides on long-existing white spot lesions*. Acta Odontol Scand, 2006. 64(2): p. 115-22.
48. Zingler, S., et al., *A randomized clinical trial comparing the impact of different oral hygiene protocols and sealant applications on plaque, gingival, and caries index scores*. Eur J Orthod, 2014. 36(2): p. 150-63.

Die Lebensqualität der Kinder mit MIH

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Literatur

1. Weerheijm KL, Jalevik B, Alaluusua S: Molar-incisor hypomineralisation. *Caries Res* 35: 390-391 (2001).
2. Alaluusua S: Aetiology of Molar-Incisor Hypomineralisation: A systematic review. *Eur Arch Paediatr Dent* 11: 53-58 (2010).
3. Crombie F, Manton D, Kilpatrick N: Aetiology of molar-incisor hypomineralization: a critical review. *Int J Paediatr Dent* 19: 73-83 (2009).
4. Bekes K: Molar incisor hypomineralization. Springer 2020.
5. Inglehart M, Bagramian R: Oral health related quality of life: an introduction, in Oral health-related quality of life, M Inglehart and R Bagramian, Editors. 2002, Quintessence: Chicago. p. pp. 13-28.
6. John MT, Micheelis W: Mundgesundheitsbezogene Lebensqualität in der Bevölkerung: Grundlagen und Ergebnisse des Oral Health Impact Profile (OHIP) aus einer repräsentativen Stichprobe in Deutschland. IDZ-Information. Informationsdienst des Instituts der Deutschen Zahnärzte, Köln 1: 1-28 (2003).
7. Heydecke G: Patient-based outcome measures: oral health-related quality of life. *Schweiz Monatsschr Zahnmed* 112: 605-611 (2002).
8. Locker D: Measuring oral health: a conceptual framework. *Community Dent Health* 5: 3-18 (1988).
9. John MT, Patrick DL, Slade GD: The German version of the Oral Health Impact Profile--translation and psychometric properties. *Eur J Oral Sci* 110: 425-433 (2002).
10. John MT, Micheelis W: Lebensqualitätsforschung in der Zahnmedizin: Konzepte, Erfahrungen und Perspektiven – Ein Überblick zur Forschungslandschaft. IDZ-Information. Informationsdienst des Instituts der Deutschen Zahnärzte, Köln 4: 1-22 (2000).
11. Chen M, Harmon P, Andersen R: Oral quality of life, in Comparing oral health care systems - A second collaborative study, Chen M and BD Andersen RM, Leclercq MH, Lyttle CS. , Editors. 1997, World Health Organisation: Genf. p. pp. 187-196.
12. Jokovic A, Locker D, Stephens M, Kenny D, Tompson B, Guyatt G: Validity and reliability of a questionnaire for measuring child oral-health-related quality of life. *J Dent Res* 81: 459-463 (2002).
13. Jokovic A, Locker D, Tompson B, Guyatt G: Questionnaire for measuring oral health-related quality of life in eight- to ten-year-old children. *Pediatr Dent* 26: 512-518 (2004).
14. Bekes K, Ebel M, Omara M, Boukhobza S, Dumitrescu N, Priller J, Redzic NK, Nidetzky A, Stamm T: The German version of Child Perceptions Questionnaire for children aged 8 to 10 years (CPQ-G8-10): translation, reliability, and validity. *Clin Oral Investig* 25: 1433-1439 (2021).
15. Bekes K, John MT, Zyriax R, Schaller HG, Hirsch C: The German version of the Child Perceptions Questionnaire (CPQ-G11-14): translation process, reliability, and validity in the general population. *Clin Oral Investig* 16: 165-171 (2012).
16. Joshi T, Rahman A, Rienhoff S, Rienhoff J, Stamm T, Bekes K: Impact of molar incisor hypomineralization on oral health-related quality of life in 8-10-year-old children. *Clin*

Oral Investig. 2022 Feb;26(2):1753-1759. doi: 10.1007/s00784-021-04150-w. Epub 2021 Aug 27. PMID: 34448917; PMCID: PMC8816800.

Literatur

1. **Amend, S, Nossol, C, Bausback-Schomakers, S, Wleklinski, C, Scheibelhut, C, Pons-Kuhnemann, J, Frankenberger, R, Kramer, N.** Prevalence of molar-incisor-hypomineralisation (MIH) among 6-12-year-old children in Central Hesse (Germany). *Clin Oral Investig* 2020.
2. **Bandeira, LL, Machado, V, Botelho, J, Haubek, D.** Molar-incisor hypomineralization: an umbrella review. *Acta Odontol Scand* 2021;79:359-69.
3. **Elhennawy, K, Schwendicke, F.** Managing molar-incisor hypomineralization: A systematic review. *J Dent* 2016;55:16-24.
4. **Garot, E, Rouas, P, Somaní, C, Taylor, GD, Wong, F, Lygidakis, NA.** An update of the aetiological factors involved in molar incisor hypomineralisation (MIH): a systematic review and meta-analysis. *Eur Arch Paediatr Dent* 2021.
5. **Jedeon, K, Berdal, A, Babajko, A.** Impact of three endocrine disruptors, Bisphenol A, Genistein and Vinclozolin on female rat enamel. *Bull Group Int Rech Sci Stomatol Odontol* 2016;53:e28.
6. **Jedeon, K et al.** Enamel defects reflect perinatal exposure to bisphenol A. *Am J Pathol* 2013;183:108-18.
7. **Jedeon, K, Marciano, C, Loiodice, S, Boudalía, S, Canivenc Lavier, MC, Berdal, A, Babajko, S.** Enamel hypomineralization due to endocrine disruptors. *Connect Tissue Res* 2014;55 Suppl 1:43-7.
8. **Kramer, N, Bui Khac, NN, Lucke, S, Stachniss, V, Frankenberger, R.** Bonding strategies for MIH-affected enamel and dentin. *Dent Mater* 2018;34:331-40.
9. **Krämer,N. & Frankenberger,R.** 2020. Direct Restorations of MIH-Affected Teeth. In: *Molar Incisor Hypomineralisation* (Ed. by K.Bekes), pp. 137-152. Cham: Springer Nature Switzerland.
10. **Krämer, N, Frankenberger, R.** Kreidezähne - die aktuelle Herausforderung für den Familienzahnarzt. *DFZ* 2022;66:ahead of print.
11. **Lygidakis, NA, Garot, E, Somaní, C, Taylor, GD, Rouas, P, Wong, FSL.** Best clinical practice guidance for clinicians dealing with children presenting with molar-incisor-hypomineralisation (MIH): an updated European Academy of Paediatric Dentistry policy document. *Eur Arch Paediatr Dent* 2022;23:3-21.
12. **Rädel,M., Bohm,S., Priess,H.-W., Reinacher,U. & Walter,M.** 2020. *Barmer Zahnreport 2020 - Zahngesundheit Bei Kindern Und Jugendlichen*. 22 edn. Berlin: Barmer.
13. **Schwendicke, F, Elhennawy, K, Reda, S, Bekes, K, Manton, DJ, Krois, J.** Global burden of molar incisor hypomineralization. *J Dent* 2018;68:10-8.

14. **Somani, C, Taylor, GD, Garot, E, Rouas, P, Lygidakis, NA, Wong, FSL.** An update of treatment modalities in children and adolescents with teeth affected by molar incisor hypomineralisation (MIH): a systematic review. Eur Arch Paediatr Dent 2021.
15. **Weerheijm, KL, Duggal, M, Mejare, I, Papagiannoulis, L, Koch, G, Martens, LC, Hallonsten, AL.** Judgement criteria for molar incisor hypomineralisation (MIH) in epidemiologic studies: a summary of the European meeting on MIH held in Athens, 2003. Eur J Paediatr Dent 2003;4:110-3.

Zinnfluorid – ein Multitalent in der täglichen Zahnpflege

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- [1] Makin S. Stannous fluoride dentifrices. Am J Dent 2013; 26 (Spec Issue A): 3A-9A.
- [2] Earl J, Langford RM. Physical and chemical characterization of the surface layers formed on dentin following treatment with an experimental anhydrous stannous fluoride dentifrice. Am J Dent 2013; 26: 19A-24A.
- [3] Parkinson CR et al. The efficacy of an experimental dentifrice containing 0.454% w/w stannous fluoride in providing relief from the pain of dentin hypersensitivity: an 8-week clinical study. Am J Dent 2013; 26 (Spec Issue A): 25A-31A.
- [4] Parkinson CR et al. Confirmation of efficacy in providing relief from the pain of dentin hypersensitivity of an anhydrous dentifrice containing 0.454% with or without stannous fluoride in an 8-week randomized clinical trial. Am J Dent 2015; 28(4): 190-196.
- [5] Creeth J et al. Three randomized studies of dentine hypersensitivity reduction after short-term SnF₂ toothpaste use. J Clin Periodontol 2019; 46: 1105-1115.
- [6] Parkinson CR et al. A 24-week randomized clinical study investigating the anti-gingivitis efficacy of a 0.454% w/w stannous fluoride dentifrice. Am J Dent 2018; 31(1): 17-23.
- [7] Parkinson CR et al. Gingivitis efficacy of a 0.454% w/w stannous fluoride dentifrice: a 24-week randomized controlled trial. BMC Oral Health 2020; 20(1): 89.
- [8] Nehme M et al. A randomized clinical study investigating the staining profile of an experimental stannous fluoride dentifrice. Am J Dent 2013; 26 (Spec Issue A): 32A-38A.
- [9] Milleman KR et al. An exploratory study to investigate stain build-up with long term use of a stannous fluoride dentifrice. Am J Dent 2018; 31(2): 71-75