Supplementary material

Supplementary Table 1. Characteristics of the included studies (systematic/umbrella/evidence-based reviews with global low risk of bias).

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| Clinical topic(s) | Author, (yr) and study design | Databases | Risk of bias tools | Finally included studies | Main findings |
| • Selective carious dentin removal or excavation  • Indirect pulp treatment (IPT)  • Dental materials | Ricketts *et al*. [10] (2013)  SR | - COHGTR  - CENTRAL  - MEDLINE (Ovid)  - EMBASE (Ovid) | - CC tool | - 8 trials | - Stepwise and partial excavation techniques reduced the incidence of pulp exposure in symptomless, vital, carious primary teeth.  - Both techniques show clinical advantages over complete caries removal in the management of dentinal caries in primary dentition. |
| Santos *et al*. [18] (2017)  SR/MA | - PubMed/MEDLINE  - CENTRAL  - Scopus  - TRIP  - ClinicalTrials | - CC tool | - 11 in the SR  - 4 in the MA | - Follow-up period: 24 to 48 months, with dropout rates of 0–25.7%.  - The type of material for IPT did not significantly affect the risk of failure of the procedure.  - Calcium hydroxide exhibited a higher probability of failure. |
| Pedrotti *et al*. [19] (2019)  SR/MA | - PubMed/MEDLINE  - Scopus  - CENTRAL  - ClinicalTrials | - CC tool | - 4 in the SR and MA | - Results showed an increased risk of experiencing restoration failures (OR = 1.74 (95% CI = 1.01 to 3.00)), after selective carious tissue removal of soft dentin.  - Selective carious tissue removal of soft dentin may increase the risk of experiencing restoration failure in primary teeth. However, the evidence level is insufficient for definitive conclusions. |
| Santamaría *et al*. [20] (2020)  UR | - PubMed/MEDLINE  - LILACS  - Cochrane Library  - BBO | - CC tool  - PRISMA | - 12 SR and 15 RCT | - For the treatment of deep carious lesions, selective caries removal showed a reduction in the incidence of pulp exposure.  - The benefit of selective caries removal over complete caries removal, in terms of pulp symptoms, was not confirmed.  - Regarding restorative materials, preformed metal crowns showed the highest success rates compared to other restorative materials (amalgam, composite resin, glass ionomer cement and compomer), in the long term (12–48 mon). |
| BaniHani *et al*. [21] (2022)  UR | - MEDLINE  - Embase  - CDSR  - Epistemonikos  - JBIDSR  - NIHR-JL  - PROSPERO | - ROBIS tool | - 18 SR | - Fissure sealants and resin infiltration are not recommended for the management of dentinal caries lesions in primary teeth.  - Topical application of 38% SDF showed a significant caries arrest effect; its success rate in arresting dental caries increased when it was applied twice (53 to 91%) rather than once a year (31 to 79%). |
| • Silver Diamine Fluoride (SDF) | Oliveira *et al*. [22] (2019)  SR/MA | - CENTRAL  - Embase  - PubMed/MEDLINE  - Scopus  - Web of Science  - LILACS  - BBO  - Scielo | - CC tool | - 6 in the SR and 2 in the MA | - After 24 months of follow-up, in comparison to a placebo, no treatment and fluoride varnish, SDF applications significantly reduced new dentin caries lesions.  - Glass ionomer cement was more effective than SDF after 12 months of follow-up, but the difference between them was not statistically significant. |
| Seifo *et al*. [23] (2019)  UR | - PubMed  - Embase  - Cochrane Library  - PROSPERO  - JBISR | - ROBIS tool | - 7 SR | - SDF had a positive effect on the prevention and arrest of coronal and root caries, versus different comparators (fluoride varnish, ART or placebo).  - The main reported adverse event was the arrested lesions’ black staining.  - In general, there is insufficient evidence to conclude SDF for caries prevention and arrest in primary teeth. |
| Wakhloo *et al*. [24] (2021)  SR/MA | - PubMed  - Scopus  - Embase  - Cochrane Library  - Gray literature for randomized trials | - CC tool  - JBIDSR tool | - 4 in the SR and 2 in the MA | - Two studies compared 30% SDF with ART in primary molars, with 12 months of follow-up, and revealed no significant difference between them (OR = 2.02 (95% CI = 0.86–4.71)). |
| • Fluoride dentifrices | Wong *et al*. [25] (2011)  N-MA of two previous Cochrane reviews (Walsh *et al*. [26] 2010 and Wong *et al*. [27] 2010) | - Cochrane Library  - MEDLINE  - Embase (Ovid) | - CC tool | - 83 experimental and observational studies | - Benefits of using fluoride toothpaste were confirmed in caries prevention in children, but only significantly for F concentrations of 1000 ppm and above.  - The caries-preventive effects of the fluoride toothpaste increase with higher fluoride concentration.  - A higher level of fluoride toothpaste was associated with an increased risk of fluorosis. |
| Wright *et al*. [28] (2014)  RS/MA | - MEDLINE | - A standardized form | - 17 studies (including one SR) | - In pediatric populations at high risk of caries, fluoride toothpaste in primary teeth had a statistically significant effect on (i) mean decayed, missing and filled surfaces, and (ii) decayed, missing and filled primary teeth; the standard mean differences were −0.25 (95% CI = −0.36 to −0.14) and −0.19 (95% IC = −0.32 to −0.06), respectively. |
| Walsh *et al*. [29] (2019)  RS/MA | - COHGTR  - MEDLINE (Ovid)  - Embase (Ovid)  - ClinicalTrials  - WHO-P | - CC tool | - 96 studies | - In primary teeth, toothpaste containing 1000 to 1250 ppm F is more effective than non‐fluoride toothpaste.  - Brushing teeth with a toothpaste containing 1500 ppm F significantly reduced the amount of new carious lesions.  - The amount of new carious lesions was similar to 1055 ppm regarding 550 ppm fluoride toothpaste.  - There was a slight reduction in the amount of new carious lesions with 1450 ppm toothpaste compared with 440 ppm fluoride toothpaste. |
| • Ozone | Santos *et al*. [30] (2020)  SR/MA | - MEDLINE  - Embase  - CENTRAL  - LILACS  - BBO  - ClinicalTrials  - WHO-P  - OpenGray | - CC tool  - GRADE | - 12 trials | - In children, ozone therapy showed a lower reduction in the cariogenic bacterial number than chlorhexidine digluconate (mean difference = −5.65 (95% CI = −9.79 to −1.51)).  - Outcomes from individual studies exhibited no adverse events during or after ozone therapy. |
| • Non-surgical management of active dentin caries | Duangthip *et al*. [31] (2015)  SR | - PubMed  - Cochrane Library  - Embase | - CC tool  - ADA’s criteria | - 4 studies | - There is no sufficient quality evidence to support the effectiveness of SDF or daily brushing with fluoride toothpaste in arresting or slowing down the progression of active dentin caries in preschool children. |
| • Hall technique | Hu *et al*. [32] (2022)  SR/MA | - MEDLINE  - Embase  - CENTRAL  - Epistemonikos | - CC tool | - 11 trials | - Hall technique was overall 49 % more likely to succeed (RR 1.49 (95 % CI = 1.15 to 1.93)).  - When compared to conventional preformed metal crowns and direct restorations, the technique was 80 % more likely to succeed.  - Hall technique was over 6 times less likely to fail (RR = 0.16 (95% CI = 0.10 to 0.27)). |
| • Atraumatic Restorative Treatment (ART) | Frencken *et al*. [33] (2021)  SR/MA | - PubMed  - DOAJ  - LILACS  - IndMed  - GS  - CNKI | - De Amorim el’s quality criteria | - 5 trials (primary teeth) | - No statistically significant difference was found between ART with glass ionomer cement and traditional treatments in both single- and multiple-surface restorations in primary molars, at years 1, 2, 3 and 5.  - At years 4.3 and 6.3, the difference was statistically significant, favoring the ART restorations. |
| Chaudhari *et al*. [34] (2022)  SR | - PubMed  - DOAJ  - GS | - CC tool | - 6 trials | - The survival rates of single-surface and multiple-surface primary teeth restored with ART compared with conventional treatments were similar.  - This approach helps manage dental caries in children and should be considered a useful oral care intervention in clinical practice. |
| • Pit and fissure sealants in children | Wright *et al*. [35] (2016)  Critical guideline | - MEDLINE  - Embase  - CENTRAL | - GRADE | - NR | - Sealants are effective in preventing and arresting pit-and-fissure occlusal carious lesions of primary molars in children compared with the no use of sealants or use of fluoride varnishes.  - Sealants can minimize the progression of non-cavitated or initial occlusal carious lesions that receive a pit-and-fissure sealant. |
| Papageorgiou *et al*. [36] (2017)  SR/MA | - GS  - International Standard Registered Clinical/Social Study  - Directory of Open Access Journals  - Digital Dissertations  - Meta Register of Controlled Trials | - CC tool | - 16 trials | - No significant difference in either caries incidence of sealed teeth or sealant retention could be found, according to (i) mouth side (right versus left), (ii) mandible *vs.* maxilla, (iii) and tooth type (first permanent molar versus second primary molar or first primary molar versus second primary molar). |
| • Calcium Phosphate (CPP) derivative agents | Singal *et al*. [37] (2022)  SR/MA | - Embase  - Ovid  - Pubmed  - Web of Science  - CENTRAL  - Grey literature | - RevMan  - GRADE | - 26 studies in the SR and 10 in the MA | - Complete regression of active white spot lesions were superior for CPP agents regarding fluoride alone (RR = 0.80 (95% CI = 0.70 to 0.90)).  - Salivary *S. mutans* counts were significantly reduced with the combination CaP + F as compared with fluoride alone (RR = 0.69 (95% CI = 0.48 to 0.99)). |
| • Infiltration and sealing | Chen *et al*. [38] (2021)  SR/MA | - Cochrane Library  - PubMed  -Embase  - OpenGray  - PQDTG  - Web of Science | - CC tool | - 22 studies in the SR and the MA | - Infiltration and sealing significantly reduced the odds of lesion progression: infiltration *vs.* non-invasive (OR = 0.21 (95% CI = 0.15 to 0.30)) and sealing *vs.* placebo (OR = 0.27 (95% CI = 0.18 to 0.42)).  - For the primary dentition, infiltration and sealing were more effective than non-invasive treatments (OR = 0.30 (95% CI = 0.20 to 0.45)). |
| • Papacarie | Deng *et al*. [39] (2018)  SR/MA | - PubMed  - Embase  - CENTRAL  - Web of Science | - CC tool | - 15 studies in the SR and 10 in the MA | - Microbiota in caries dentine was significantly reduced with Papacarie (mean difference = 0.57 (95% CI = 0.04 to 1.09)), and anxiety feeling declined more (mean difference = −1.01 (95% CI = −1.72 to −0.30)).  - There was a greater increase in time taken for the Papacarie treatment compared with the conventional treatment (mean difference = 200.79 (95% CI = 152.50 to 249.09)). |

NR: Not reported. SR: Systematic review. MA: Meta-analysis. UR: Umbrella review. N-MA: Network Meta-analysis (Mixed Treatment Comparisons; Multiple Treatments Meta-analysis). GS: Google Scholar. COHGTR: Cochrane Oral Health Group’s Trial Register. CENTRAL: Cochrane Central Register of Controlled Trials. CC: Cochrane Collaboration (Cochrane Handbook for Systematic Reviews of Interventions). LILACS: Latin American & Caribbean Health Sciences Literature. BBO: Brazilian Library in Dentistry. CDSR: Cochrane Database of Systematic Reviews. JBIDSR: Joanna Briggs Institute Database for Systematic Reviews and Implementation Reports. NIHR-JL: NIHR Journals Library. WHO-P: World Health Organization International Clinical Trial Registry Platform. PQDTG: ProQuest Dissertations and Theses Global. ROBIS: Risk of Bias in Systematic Reviews. OR: Odds Ratio. RR: Relative Risk. CI: Confidence Interval. PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analysis. ADA: American Dental Association. RCT: Randomized Clinical Trial.