Supplementary material

Supplementary Table 1. Characteristics of economic evaluation of the 19 studies included.

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| Author (year) | Country | Length of follow-up | Age | Intervention | | No. of participants | | Type of teeth | Study type | Perspective |
| Yara [31] (2021) | Chile | 5 years | <6 years | PFS | | Control | | 1884 teeth | Primary molars | Retrospective cohort study |
| Carlos [16] (2020) | Chile | 2 years | 2–3 years | FV | Control | 275 | | Primary teeth | Randomized control trial | A payer’s perspective |
| Tan [35] (2020) | Australia | 70 years | 15 years | FV | Control | - | | Permanent teeth | Retrospective cohort study | The Australia health care system perspective |
| Gerardo [32] (2019) | Chile | 6 years | 6 years | PFS | Control | - | | First permanent molars | A cohort study | A public payer’s  perspective |
| Huang [38] (2019) | America | 4 years | 5–12 years | PFS | Control | 1000 | | First permanent molars | Retrospective cohort study | A societal perspective |
| Raul [26] (2019) | Chile | 2 years | 4–6 years | FV | Control | - | | - | Retrospective cohort study | A public health system perspective |
| Falk [34] (2018) | German | A lifetime | 6–18 years | FV | Control | - | | Permanent teeth | Retrospective cohort study | A mixed public-private-payer’s perspective |
| Ilbin [19] (2018) | America | 7 years | 3–6 years | PFS | FV | 931,803 | | Primary or permanent molars | Retrospective cohort study | - |
| Tumader [3] (2018) | Spain | 9 years | 6–8 years | PFS | FV | - | | First permanent molar | A cohort study | A payer’s perspective |
| Ivor [33] (2017) | England | 3 years | 6–7 years | PFS | FV | 417 | | 418 | First permanent molars | Randomized control trial |
| Charisma [25] (2016) | America | 10 years | 0.5–5 years | PFS | FV | 250 | 1311 | Primary teeth | Retrospective cohort study | A healthcare payer’s perspective |
| Griffin [29] (2016) | America | 4 years | 6–7 years | PFS | Control | 1000 | | First permanent molars | Retrospective cohort study | A societal perspective |
| Matthew [7] (2016) | America | 4 years | 6–8 years | PFS | FV | - | | - | Randomized control trial | A public health perspective |
| Donald [24] (2014) | America | 3 years | <6 years | PFS | Control | 10,000 teeth | | Primary  molars | Retrospective cohort study | A public payer’s perspective |
| Patita [9] (2007) | America | 4 years | 6 years | PFS | Control | 2132 | | First permanent molars | Retrospective cohort study | A societal perspective |
| Rocio [37] (2006) | - | 42 months | 9–42 months | FV | Control | 5171 | | Primary teeth | Retrospective cohort study | A Medicaid payer’s perspective |
| Rocio [36] (2005) | - | 10 years | - | PFS | Control | - | | First permanent molars | Retrospective cohort study | A payer’s perspective |
| Georgina [30] (2002) | America | 5 years | 6–14 years | PFS | Control | 30 | | 30 | First and second permanent molars | Retrospective cohort study |
| Griffin [28] (2002) | America | 9 years | 72–83 months | PFS | Control | - | | First permanent molars | Retrospective cohort study | A societal perspective |

FV, fluoride varnish; PFS, pit and fissure sealant.

Supplementary Table 2. Characteristics of costs and effectiveness in the economic evaluations.

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| Author (year) | Currency | Economic evaluation type | Discount rate  (%) | Effectiveness/Utility/Benefits | Cost | Method | Economic evaluation |
| Yara [31] (2021) | US dollars  (2014) | CEA | 3 | Calculate the years free of caries | Calculate the cost of routine oral health care, PFS and restorative treatment | Calculate ICER | The ICER of PFS leading to a savings of $25 for each caries-free  year gained and overall savings of $742 million for the United States dental health system over a 5-year period |
| Carlos [16] (2020) | US dollars (2019) | CEA | 3 | Calculate the incidence of caries lesions and the mean number of decayed, missing, or filled teeth (DMFT) | Calculate the costs of fluoride varnish and the teeth with caries lesions filled | Calculate ICER | The ICER was USD 0.25 for each extra healthy child |
| Tan [35] (2020) | Australian dollars (2014) | CEA and CUA | 5 | Calculate the number of DMFT prevented and quality-adjusted life-year (QALY) | Calculate the total costs of FV and treatments | Calculate ICER | The ICER of FV was $849 per prevented DMFT and $1851 per QALY gained |
| Gerardo [32] (2019) | US dollars (2019) | CUA | 3 | Calculate the prevalence of caries in the first permanent molars and quality-adjusted tooth years (QATYs) | Calculate the direct costs of interventions and treatment of new caries lesions and human resources | Calculate the incremental cost-utility ratio (ICUR) | The ICUR of the “seal all” strategy was USD 6.48 per QATY and it generated 0.2 QATY more than non-intervention |
| Huang [38] (2019) | US dollars (2014) | CUA | 3 | Calculate the percentage reduction in incidence and increment of caries and averted disability-adjusted life years (DALYs) | Calculate the resource costs of school-based sealant programs (SSPs) | Calculate ICER | The SSPs cost $67,019.10 per averted DALY than no school-based program |
| Raul [26] (2019) | Chilean pesos  (2015) | CEA | 3 | Estimate the prevalence of caries-free children | Calculate the total costs of each strategy | Estimate the incremental cost per caries-free child | FV increased the caries-free population by 3.7% and incremental cost per additional caries-free child was CLP 130,849 |
| Falk [34] (2018) | Euro  (2016) | CEA | 3 | Calculate the DMFT increment | Calculate the costs of fluoride varnish and treatment | Calculate ICER | The ICER of FV was 343 Euro/ DMFT in low-risk group, 93 Euro/DMFT in medium-risk groups and 8 Euro/DMFT in high-risk groups |
| Ilbin [19] (2018) | US dollars (2015) | CEA | - | Calculate the caries prevalence | Calculate the cost of caries-related treatments and Medicaid expenditures | Calculate expenditures per member per year (PMPY) | The expenditure of PFS was 4.01$, 1.79$, $4.65 respectively in three state while FV was 23.62$, 7,67$, 21.12$ PMPR |
| Tumader [3] (2018) | US dollars (2011) | CEA | No discount | Calculate the percentage of occlusal caries lesions in the first permanent molar | Calculate the total cost of each strategy | Calculate ICER | The ICER of PFS was $156.87 per caries lesion averted if replacing a failed PFS was 100%, and $113.00 if replacing a failed PFS was lowered to 50% |
| Ivor [33] (2017) | Pound  (2015) | CUA | 3.5 | Calculate the percentage of DMFT avoided and quality-adjusted tooth-years (QATYs) | Calculate the costs per caries avoided and per QALY | Calculate ICER | The cost to the National Health Service (NHS) per child was £500 for FS, compared with £432 for FV, with a difference of £68.13 in favor of FV. From a partial societal perspective, the costs were £529 for FS and £457 for FV, with a mean difference of £71.96 |
| Charisma [25] (2016) | US dollars (2011) | CEA | 3 | Calculate the number of carious teeth and full mouth dental reconstructions (FMDRs) reduction | Calculate the costs of treating dental caries, FMDR, and each intervention | Calculate the  cost-effectiveness  ratio (CER) | Annual avert cost of PFS was $58,833 and FV was $195,347 |
| Griffin [29] (2016) | US dollars (2014) | CUA | 3 | Calculate the averted disability-adjusted life years (DALYs) | Calculate the sealant program resource costs, filling costs and lost productivity | Calculate the net cost per a averted DALY | PFS prevent 485 fillings and 1.59 DALYs |
| Matthew [7] (2016) | US  Dollars (2005) | CEA | 6 | Calculate the occlusal caries reduction | Calculate the costs of sealants and fluoride varnish | Calculate the average  cost-effectiveness ratio (ACER) | The ACER for sealants was USD 137 for each reduction in caries, and varnish was USD 102 |
| Donald [24] (2014) | US dollars (2012) | CEA | 2 | Calculate the number of restorations avoided | Calculate the relative costs per  restoration avoided. | Calculate ICER | The ICER of always seal was $18.32 per restoration avoided and $173.43 per extraction avoided compared to never seal |
| Patita [9] (2007) | US dollars (2001) | CUA | 3 | Calculate the quality-adjusted of the tooth-year (QATYs) | The total costs of dental sealant and one surface amalgam restoration | Calculate the incremental cost per QATY ratio | The relative incremental cost per 0.19 QATY ratio by sealing the molar ranged from $36.7 to $83.5 |
| Rocio [37] (2006) | US dollars (2003) | CEA | 3 | Calculate cavity-free months gained per tooth | Calculate the direct costs of FV and treatments | Calculate the incremental cost per cavity-free month and ICER | FV improved by 1.52 cavity-free months with a cost of $7.18 for each cavity-free month gained per child and $203 for each treatment averted. |
| Rocio [36] (2005) | US dollars (2002) | CEA | 3 | Calculate cavity-free months | Calculate the costs of sealants and treatments | Calculate ICER | The strategy of SA cost $.08 for each additional cavity-free month gained per tooth |
| Georgina [30] (2002) | US dollars (1992) | CEA | 3 | Calculate the DMFS score | Calculate the total costs of dental care provided | Calculate ICER | The cost of producing a healthy tooth surface was $27 |
| Griffin [28] (2002) | US dollars (1999) | CEA | 3 | Calculate the occlusal caries increment | Calculate the costs of sealants and single-surface amalgams | Calculate ICER | The ICER of PFS was $23.42  compared seal none to seal all (SA) per saved tooth surface and $73.96  compared TARGET to SA |

CEA, cost-effectiveness analysis; CUA, cost-utility analysis; ICER, incremental cost-effectiveness ratio; FV, fluoride varnish.