STATENS BEREDNING FÖR MEDICINSK OCH SOCIAL UTVÄRDERING

Bilaga 3 Tabeller över inkluderade studier avseende karies

Appendix 3 Tables of included studies regarding caries

Innehåll

Tabell 1 Inkluderad Systematisk översikt.

Table 1 Included systematic review.

Author	*Havsed et al.*
Year	*2023*
Country	*Sweden*
Ref #	*[1]*
Study design	*Systematic review*
Litterature search	*23 of April 2020*
Population	*Individuals of all ages, sex, and ethnicity. Caries should be defined at baseline and follow up regarding prevalence and severity on an individual basis. Alternatively, caries progression should be possible to calculate from data presented in the included study or in studies referred to.*
Intervention	*A prediction model that expresses caries increment as a function of at least 3 variables as predictors. Predictors described in sufficient detail to allow calculation of model performance. When predictors were not described in detail but referred to, the referenced study was retrieved to recover key data.*
Comparator	*Additional prediction model(s) included in the study.*
Outcome	*Development either (i) from sound tooth/tooth surface to detectable lesion in enamel or dentin: i.e., from health to disease onset, or (ii) from initial to more extensive lesion: i.e., individual caries progression, described with thresholds to allow calculation of model performance. When not described but referred to, the referenced study was retrieved to recover key data.* *The outcome may be phrased as caries, caries experience, caries increment, or caries progression. In the following text, the term caries increment is defined as the number of new lesions, teeth or surfaces occurring in an individual within a stated period of time.*
Timing	*Follow-up time≥1 year.*
Setting	*Oral health care without restriction to geographical location.*
Other inclusion criteria	*Model performance: calibration, discrimination (e.g., AUC, area under receiver operating curve, equivalent to c-statistics) and classification measures (e.g., sensitivity, specificity, positive and negative predictive values, positive (LR+) and negative (LR−) likelihood ratios). Measure values should be correctly calculated and presented based on data described in the study and with data allowing recalculation of model performance with confidence interval.*
Results	*21 studies providing 66 prediction models fulfilled the inclusion criteria. Over 150 candidate predictors were considered, and 31 predictors remained in studies of final developmental models: caries experience, mutans streptococci in saliva, fluoride supplements, and visible dental plaque being the most common predictors. Predictive performances varied, providing LR+ and LR−ranges of 0.78–10.3 and 0.0–1.1, respectively. Only four models of coronal caries and one root caries model scored LR+ values of at least 5. All studies were assessed as having high risk of bias, generally due to*

	insufficient number of outcomes in relation to candidate predictors and considerable uncertainty regarding predictor thresholds and measurements. Concern regarding applicability was low overall
Conclusion	*The review calls attention to several methodological deficiencies and the significant heterogeneity observed across the studies ruled out meta-analyses. Flawed or distorted study estimates lead to uncertainty about the prediction, which limits the models' usefulness in clinical decision-making.*
Comments	
Risk of bias	*Low*

Studier publicerade efter att litteratursökningen i den ovan tabellerade systematiska översikt genomfördes identifierades genom att sökningen uppdaterades. Totalt identifierades 10 studier som publicerats efter att översikten genomförts. Studierna har studerat olika prediktionsmodeller. En kortfattad beskrivning av studierna finns i tabell 2 och resultaten från studierna finns sammanfattade i tabell 3. Studierna granskades med hjälp av granskningsmallen PROBAST varpå alla bedömdes ha en hög risk för bias. Brister eller oklarheter i studierna finns sammanfattade i tabell 4.

Tabell 2 Kortfattad sammanfattning av upplägget av de primärstudier som publicerats efter att den systematiska översikten av Havsed et al., (2023) genomfördes [1].

Table 2 Main study characteristics of the included primary studies published after the systematic review by Havsed et al., (2023) was conducted [1].

First author(n), year; country (reference)	Population (n) age	Follow-up	Model	Predictors (n)	Caries incidence	Notes
Agouropoulus, 2022; Greece [2]	146; 2-5 year	2 years	Log. Regression	11	53%	10 schools
Fee, 2022; UK [3]	1,267, >18 years	4 years	Log. Regression	6	23% root caries	NIHR
Jurasic, 2021; USA [4]	57,675; mean 60 year	1 year	Log. regression	3-10	NR	veterans
Karhade, 2021; USA [5]	2,308*; 3-6 year	3 years	AutoML	10	54%	NHANES
Luo, 2021; China [6]	406; 7 year	2 years	Nomogram	7	54%	1 school
Ogwo, 2023; USA [7]	258; 5 year	18 years	LASSO	16	69%	8 hospitals
Pang, 2021; China [8]	345; 13-14 year	21 mo	Log. regression	23	63%	2 schools

First author(n), year; country (reference)	Population (n) age	Follow-up	Model	Predictors (n)	Caries incidence	Notes
Park, 2021; Korea [9]	1,259; 1-5 year	4-7 years	XGBoost	10	39%	KNHANES
Taqi, 2023; Pakistan [10]	183; 11-12 year	18 mo	Cariogram	9	9%	7 schools
Toledo Reyes, 2023; Brazil [11]	467; 1-5 year	2 years	XGboost	3	42%	ep.study
	428; 1-5 year	10 years	XGboost	6	33%	ep.study

Tabell 3 Kortfattad sammanfattning av resultaten i de primärstudier som publicerats efter att den systematiska översikten av Havsed et al., (2023) genomfördes [1].

Table 3 Main results of the included primary studies published after the systematic review by Havsed et al., (2023) was conducted [1].

First author, year (reference)	Outcome				
	Sens/Spec	PPV/NPV	LR+/LR-	Accuracy	Cutoff
Agouropoulis, 2022 [2]	0.88/0.16	0.54/NR	1.05/0.75	0.54	Caries increment >0
Fee, 2022 [3]	0.71/0.70	NR/NR	1.77/0.41	0.79	Root caries >0
Jurasic, 2021 [4]	0.58/0.53	0.30/0.79	1.23/0.79	NR	Caries-related treatm
Karhade, 2021 [5]	0.73/0.57	0.61/NR	1.70/0.47	0.65	ICDAS>2
Luo, 2021 [6]	NR/NR	NR/NR	NR/NR	0.77	Δdmft/DMFT>0
Ogwo, 2023 [7]	0.93/NR	0.86/NR	NR/NR	0.84	New caries >0
Pang, 2021 [8]	0.29/0.63	0.29/0.63	0.78/1.12	NR	ΔDMFT>0 low risk
	0.59/0.68	0.74/0.53	1.84/0.60	NR	ΔDMFT>0 low risk
Park, 2021 [9]	0.77/0.58	NR/NR	1.67/0.57	0.76	dft>0
Taqi, 2023 [10]	0.70/0.60	NR/NR	1.75/0.50	NR	New caries
Toledo Reyes, 2023 [11]	0.68/0.82	NR/NR	3.78/0.39	0.76	Prim. dent, ICDAS>2
	0.65/0.69	NR/NR	2.10/0.51	0.68	Perm. Dent

LR− = the likelihood that a person with a negative test result will nor develop caries.; **LR+** = the likelihood that a person with a positive test result develops caries; **n** = number; **NPV** = Negative predictive value; **NR** = not reported; **PPV** = Positive predictive value

Tabell 4 Risk för biasbedömning (RoB), enligt PROBAST, av inkluderade primärstudier som publicerats efter att den systematiska översikten av Havsed et al., (2023) genomfördes [1].

Table 4 Risk of bias (RoB) according to PROBAST of primary studies published after the systematic review by Havsed et al., (2023) [1] was conducted.

First author, year (reference)	Model	Participants	Predictors	Outcome	Analysis	Overall RoB
Agouropoulos, 2022 [2]	Log. regression	+	+	+	-	High
Fee, 2022 [3]	Log. regression	-	+	+	-	High
Jurasic, 2021 [4]	Log. regression	-	+	+	-	High
Karhade, 2021 [5]	Auto ML (AI)	-	+	+	?	High
Luo, 2021 [6]	Nomogram	-	+	+	-	High
Ogwo, 2023 [7]	LASSO (AI)	-	+	+	?	High
Pang, 2021 [8]	Log. regression	-	+	-	?	High
Park, 2021 [9]	XGBoost (AI)	-	+	-	?	High
Taqi, 2023 [10]	Cariogram	-	+	-	-	High
Toledo Reyes, 2023 [11]	XGBoost (AI)	-	+	-	?	High

+ = Low risk of bias; **–** = High risk of bias; **?** = Unclear risk

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