



Caries increment and prediction in adolescents 12 to 18 years of age

J. David, M. Raadal, N. J. Wang, G. V. Strand
Faculty of Dentistry, University of Bergen, Norway

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Aims

- Describe the **increment of dental caries** from the age of 12 to 18 years
- Explore possibilities of **predicting caries increment** from 12 to 18 years of age based on caries experience at 12 years

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Study design

- Prospective, longitudinal survey, based on two cross-sectional examinations of the same cohort
- 1993: 12 years of age
- 1999: 18 years of age

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Sample

	♂	♀	Total
Baseline (12 yr-olds)	77	82	159
Drop-outs	21	26	47
Follow-up (18 yr-olds)	56	56	112

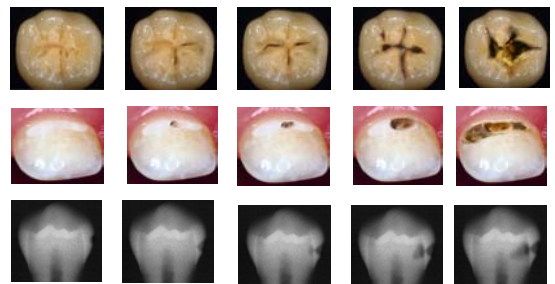
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Caries examination

- Examiners
 - 5 in 1993
 - 1 in 1999
- Reliability
 - 1993: Inter- and intra-examiner test-retest
 - 1999: Intra-examiner test-retest
- Bite-wing radiographs
 - All subjects with posterior approximal contacts

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Caries diagnostic system Severity grading 1-5



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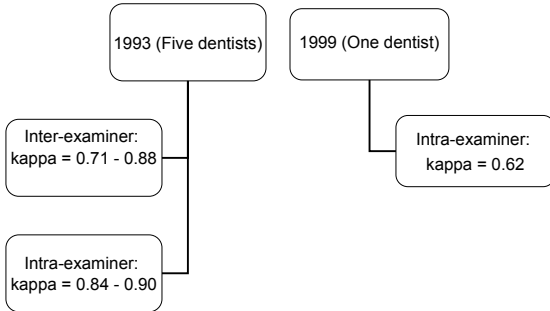
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(Espelid et al., 1990, Tveit et al., 1990)

Results

Cohen's kappa



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Caries prevalence at 12 and 18 years of age

	12 yrs Mean (SD)	18 yrs Mean (SD)
D ₁₋₅ MFS	8.9 (7.8)	13.1 (11.4)
D ₃₋₅ MFS	2.7 (3.5)	8.7 (9.4)

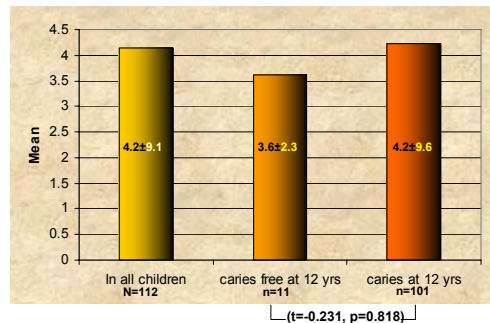
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DMFS and its portions

	Diagnostic criteria	12 yrs Mean (SD)	18 yrs Mean (SD)
D ₁₋₂ S		6.3 (5.9)	4.4 (4.5)
D ₃₋₅ S		0.6 (1.1)	0.9 (2.2)
MS		0.0 (0.5)	0.2 (1.1)
FS		2.0 (2.8)	7.6 (8.0)

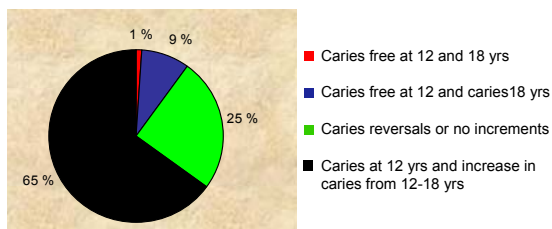
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Mean caries increment during the follow-up period (D₁₋₅MFS)



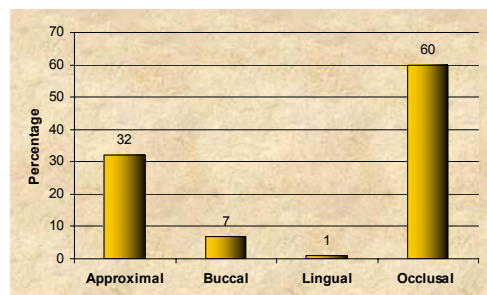
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Adolescents grouped by caries experience (D₁₋₅MFS) at 12 and 18 yrs of age



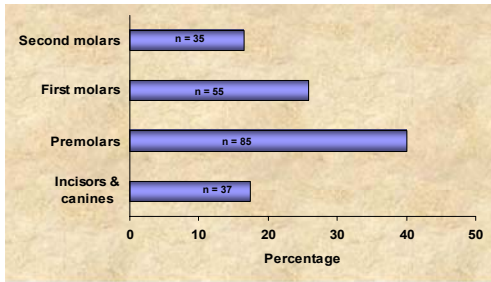
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Type and percentage of surfaces with D₃₋₅FS increment



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Number and percentage of surfaces with manifest caries increment ($D_{3-5}FS$) from 12 to 18 years on approximal surfaces



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Caries prediction on approximal surfaces

Approximal caries development from 12 to 18 years of age

↓
Need for two surface fillings

Consequences

- Considerable loss of tooth substance
- Repeated replacements (Qvist et al., 1986, Mjor et al., 2002)
- Risk of dental anxiety (Raadal 2002)

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Prediction of approximal caries increment ($D_{3-5}FS$) from 12 to 18 years of age

Predictor at 12 yrs	Adolescent with $D_{3-5}FS$ approx increment	Sensitivity	Specificity	Actual proportion of adolescents in risk group
		%	%	%
$D_{1,2}FS$ approx >0 premolars	$D_{3-5}FS > 0$	35	95	46
	$D_{3-5}FS > 1$	47	95	32
	$D_{3-5}FS > 2$	54	92	23
	$D_{3-5}FS > 3$	60	91	18
	$D_{3-5}FS > 4$	85	90	12
$D_{1,2}FS$ approx >0 second molars	$D_{3-5}FS > 0$	21	98	46
	$D_{3-5}FS > 1$	31	99	32
	$D_{3-5}FS > 2$	38	98	23
	$D_{3-5}FS > 3$	50	98	18
	$D_{3-5}FS > 4$	62	96	12

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Conclusions

- Considerable caries increment in all tooth groups from 12 to 18 years of age
- Premolars had largest proportion of approximal surfaces with manifest caries increment (40%)
- Best predictors for increment of manifest caries on approximal surfaces from 12 to 18 years of age were approximal caries in premolars and second molars at the age of 12 yrs
- Individuals who developed four or more manifest lesions on approximal surfaces between 12 to 18 years were easiest to predict (sen + spec = 175 to 158)

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