

# Long-Term Effect of Polyols in High Risk Caries Schoolchildren

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## Six Months of Daily High-Dose Xylitol in High-Risk Schoolchildren: A Randomized Clinical Trial on Plaque pH and Salivary Mutans Streptococci

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# Background

- ▶ Evaluating the effect of a xylitol-containing chewing gum (total daily intake of 11.6 g xylitol)
- ▶ Compared to a sorbitol/isomalt gum (control)
- ▶ Effect on plaque-pH and salivary mutans streptococci was evaluated after 3 and 6 months of chewing and 3 months after cessation of chewing

# Background

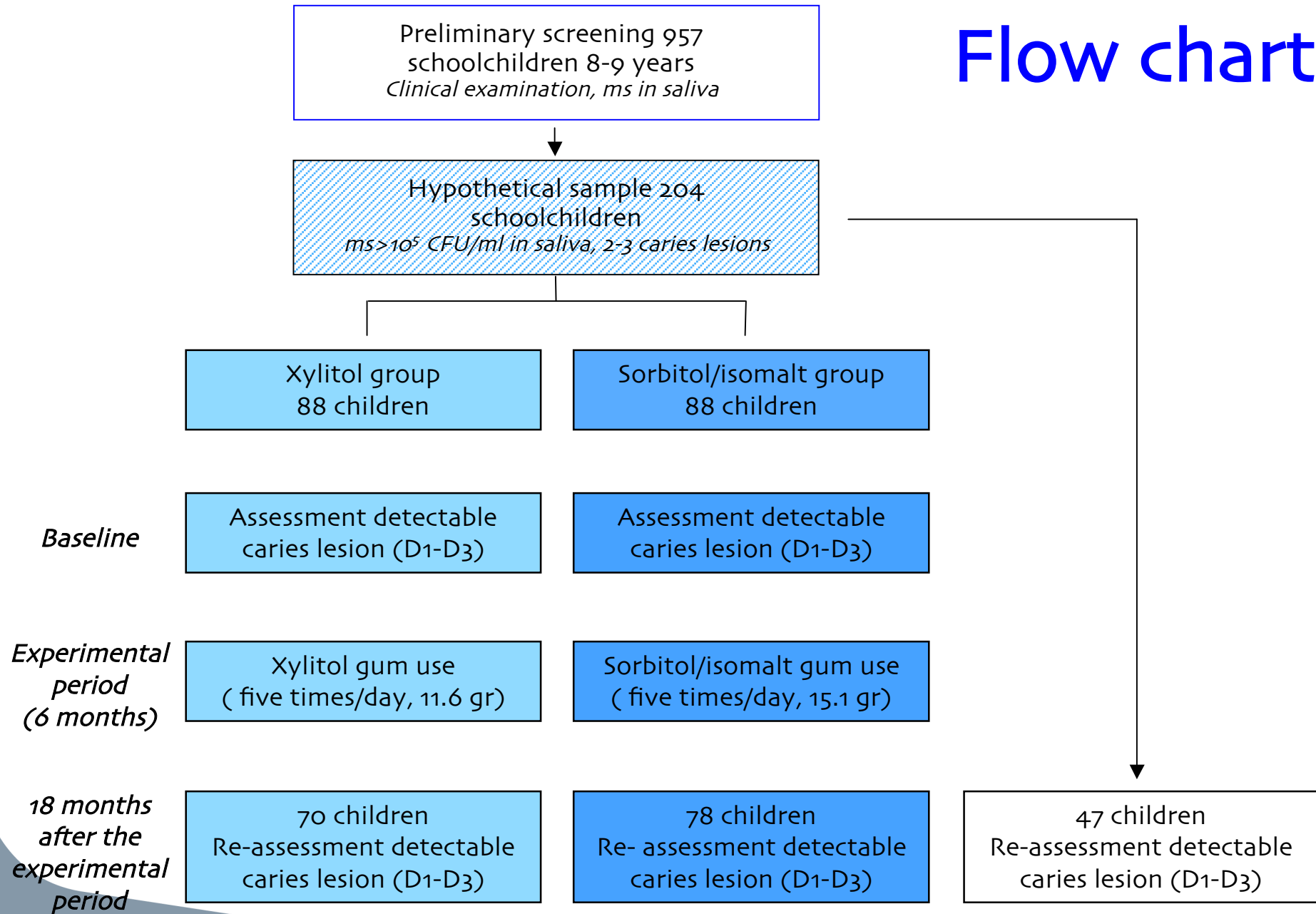
	Plaque acidogenicity (AUC <sub>5.7</sub> )			Mutans streptococci (Log CFU/ml)		
	<i>Xylitol</i>	<i>Control</i>	<i>p-value</i>	<i>Xylitol</i>	<i>Control</i>	<i>p-value</i>
t0 (baseline)	12.7 ± 0.7	11.5 ± 0.6	0.20	12.7 ± 0.7	11.5 ± 0.6	0.36
t1 (after 3 mo)	10.2 ± 0.5	11.7 ± 0.6	0.05	10.2 ± 0.5	11.7 ± 0.6	0.04
t2 (after 6 mo)	5.5 ± 0.5	8.0 ± 0.4	<0.01	5.5 ± 0.5	8.0 ± 0.4	0.02
t3 (3 mo after end)	11.0 ± 0.6	12.8 ± 0.6	0.03	11.0 ± 0.6	12.8 ± 0.6	0.08
p-value	<0.01		0.02	0.02		0.21

Campus et al., 2009

# Aim

The aim of this study was to evaluate the long-term effect of a six-month polyol-based chewing-session program on caries prevalence

# Flow chart



# Material & method

## Clinical examination

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- ▶ Clinical examination was carried out at baseline and at 18 months
- ▶ Clinical examination was carried out in the clinic by calibrated examiners
- ▶ Professional cleaning was performed prior to examination
- ▶ Caries lesions were diagnosed at D<sub>1</sub>-D<sub>3</sub>-level by visual inspection

# Material & method

## Chewing gums

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- ▶ Three test sessions were performed:
  - chewing gum containing 36.6% xylitol, 17.7% sorbitol 9.7% maltitol, 7.1% mannitol (xylitol; totally 11.6 g)
  - chewing gum containing 30% isomalt, 17.7% sorbitol, 16.3% maltitol, 7.1% mannitol (sorbitol/isomalt)
  - no gum was used (no gum)
- ▶ The chewing gums were identical regarding weight (3.17 g), form, colour and packaging
- ▶ Chewing of 2 pellets for 5 min, 5 times/day
- ▶ Chewing times were 8.30 am, 1.00, 3.0, 6.00 and 9.00 pm, after main meals and snacks

# Material & method

## Data analyses

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- ▶ Calculations of  $\Delta$ -DMFS was only based on the caries situation of the permanent teeth;
- ▶ Changes in mean DMFS were analyzed using one-way ANOVA;
- ▶ DMFS score modifications were analyzed using multiple analysis of variance models and Anova Cox Regression Model;  $\Delta$ -DMFS was the outcome variable and groups, gender, oral health behaviours and number of sound surfaces at baseline the explanatory variables;

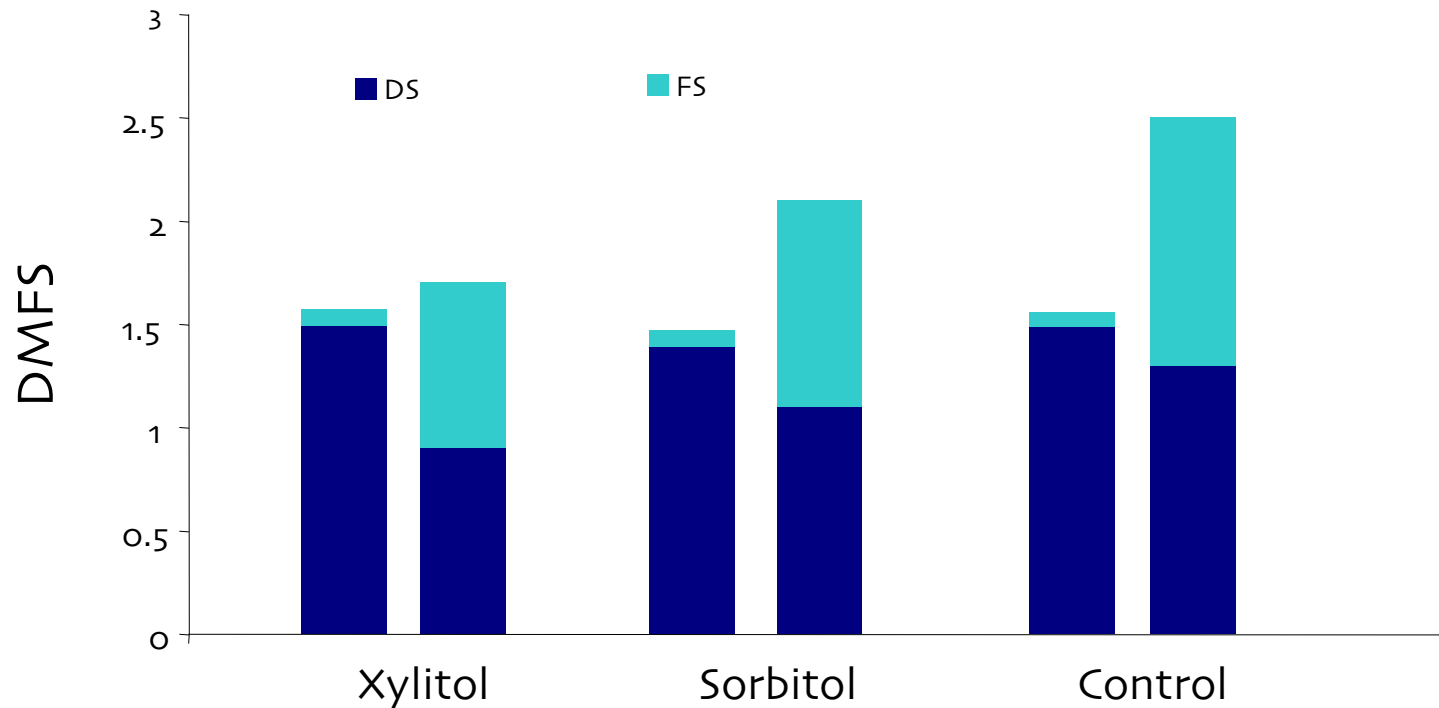
$p < 0.05$  was considered as statistically significant.



# Results

	Group			
	<i>Xylitol</i>	<i>Sorbitol</i>	<i>Control</i>	<i>p-value</i>
Baseline				
Follow-up (18 months)	1.5 ± 0.2	1.4 ± 0.3	1.5 ± 0.1	
p-value	1.7 ± 0.2 > 0.05	2.1 ± 0.2 0.01	2.5 ± 0.2 < 0.01	p < 0.001
	<i>Xylitol vs sorbitol p=0.02</i>	<i>Xylitol vs control p&lt;0.01</i>	<i>Sorbitol vs control p=0.04</i>	

# Results



First column baseline  
Second one follow-up

# Results

N observations 195 log likelihood = -119.17  $p < 0.01$

<i><math>\Delta</math>-DMFS</i>	<i>HRratio</i>	<i>95% CI</i>	<i>p-value</i>
Group (xylitol vs others)	0.4	0.26 – 0.61	<0.01
Toothbrush frequency n 195 (<2/day)	1.3	1.16 – 3.04	0.04

# Conclusions

Data suggest that polyol-based chewing gums have a long-term effect on caries increment in children with a xylitol-containing session being the most effective.