

# High impact of implementation on school-based smoking prevention: The X:IT Study - a randomized smoking prevention trial

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## INTRODUCTION

- ✓ Careful implementation is one of two important keys to reach the full potential of an intervention. Quality of the intervention being the other.
- ✓ In most studies implementation fidelity is measured insufficiently, not taking into account the complexity of the concept nor the intervention.
- ✓ No studies have estimated the effect of overall implementation on an adolescent smoking prevention intervention.

## THE INTERVENTION

- ✓ School-based multi-component program to prevent smoking among Danish 13-15 year olds:
  - 1) smoke-free school grounds
  - 2) smoke-free curriculum
  - 3) parental involvement (dialogue and contracts)

## Implementation fidelity.....

...is what a program consists of when it is delivered in a particular setting (Durlak & DuPre, 2008).

## METHODS

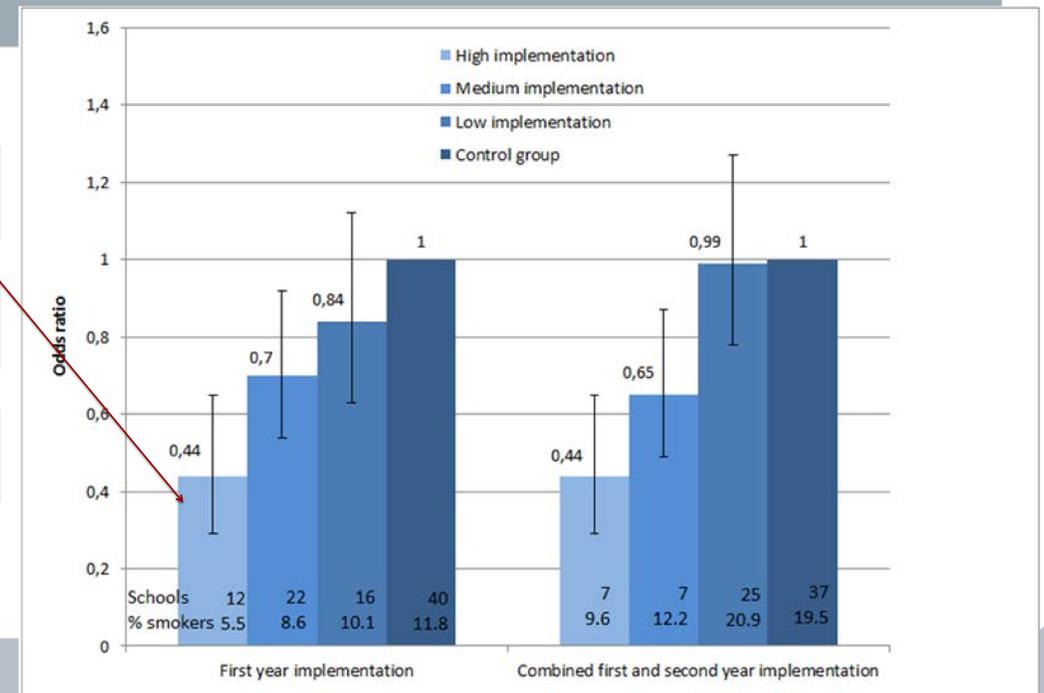
- ✓ We assessed fidelity of implementation by domains of adherence, dose, quality of delivery and participant responsiveness.
- ✓ Measures of implementation fidelity were combined into an implementation index and effect on school smoking status were examined through logistic regression analyses.
- ✓ Data: pupil and school coordinator questionnaires from first follow-up (51 intervention schools) and second follow-up (39 intervention schools).

## CONCLUSION & IMPLICATIONS

- ❖ We developed a theoretically based jointed implementation fidelity measure, aimed at use in complex interventions.
- ❖ Level of implementation fidelity varied considerably between schools and declined or improved over time depending on the program component studied.
- ❖ One fourth of schools implemented the X:IT intervention to a high degree (both years).
- ❖ High implementation was strongly associated with lower proportions of adolescent smokers.

## RESULTS

- High implementation**
  - all three components according to demands
- Medium implementation**
  - two out of three components
- Low implementation**
  - one or none of the components as required



Intervention component	Fidelity measures	Adherence	Dose	Quality of delivery	Participant responsiveness
<b>Smoke-free school grounds</b>					
Definition	Rules for smoking at school	Exposure to smoking at school	Enforcement	Attitudes to smoking rules	
Measures (response categories)	Are pupils allowed to smoke during school hours? (Yes+ yes outside school grounds vs. no) Are teachers allowed to smoke during school hours? (Yes vs. yes if invisible to pupils vs. no)	How often do you see pupils smoke different places at school? (Daily+ sometimes vs. never) How often do you see teachers smoke different places at school? (Daily+ weekly+ monthly vs. less+ never)	How often do teachers control pupil smoking inside the school, outside on school grounds and outside the school grounds? (Daily+ weekly+ monthly vs. less+ never)	State your opinion: Pupils/teachers should be allowed to smoke during school hours? (Totally agree+ agree vs. neither vs. disagree+ totally disagree)	
Data source	School coordinator questionnaire	Pupil questionnaire	School coordinator questionnaires	Pupil questionnaires	
<b>Smoke-free curriculum</b>					
Definition	Eight mandatory lessons on smoking related issues delivered	Number of lessons on smoking related issues received	Quality assessment of 'Up in Smoke' (curriculum material)	Attitudes to teaching about smoking related issues	
Measures (response categories)	For each school class, how many of these lessons did the class have? (Mandatory eight lessons+ more vs. less+ none)	How many hours of teaching did you have? (None+ 1-3 hours+ 4-6 hours vs. 7-9 hours+ 10 hours or more)	How well did the 'Up in Smoke' material work? (Very well+ well vs. parts of it not so well+ not well+ not well at all vs. didn't teach/use the material)	How did you like the teaching? (Very much+ okay vs. didn't like+ didn't like at all vs. no teaching)	
Data source	School coordinator questionnaire	Pupil questionnaire	School coordinator questionnaire	Pupil questionnaire	
<b>Parental involvement</b>					
Definition	a) Smoke-free contracts b) Smoke-free dialogues c) X:IT presented at a parents meeting		Parental involvement in a) The contract, and b) The smoke-free dialogue		
Measures (response categories)	a) Smoke-free contract (Fulfilled and signed vs. not fulfilled and signed) b) Did you have a smoke-		a) Were your parents positive towards the smoke-free contracts? (Yes+ yes partly vs. no+ don't know)		

## References and further information:

- Durlak JA & DuPre EP. Implementation Matters: A Review of Research on the Influence of Implementation on Program Outcomes and the Factors Affecting Implementation. Am J Community Psychol (2008) 41:327-350
- Andersen A, Krolner R, Bast LS, et al. Effects of the X:IT smoking intervention: a school-based cluster randomized trial. Int J Epidemiol 2015. doi: 10.1093/ije/dyv145
- Andersen A, Bast LS, Ringgaard LW, et al. Design of a school-based randomized trial to reduce smoking among 13 to 15-year olds, the X:IT study. BMC Public Health 2014;14:518.
- Project homepage: <http://www.xit-web.dk/>