

Effectiveness of School Based Tobacco Control Programs in Early Adolescence

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ABSTRACT:Smoking is one of the leading preventable public health problems worldwide, resulting in millions of deaths every year. Smoking initiation rates during early adolescence (11–15 years) showed a marked increase after 1990 in almost all regions of Europe and continuous anti-smoking campaign is a necessity.

Aim: It was to investigate the efficacy of smoking cessation intervention programs at elementary school level.

Methods: Studies comprising children below 12 years old were included. The research was limited in English language articles. After reading the abstract, the research was continued on to 10 articles which presented the greatest relevance to the subject and they were finally included in the study.

Results: Four RCT's, 4 longitudinal studies (one of them mixed method-quantitative and qualitative-design) and 2 cross-sectional studies were traced. Seven of them achieved statistically significant endpoints, although fully significant results according to primary outcomes were observed in only 3 studies.

Conclusion: Elementary school based smoking cessation programs produce limited effect. Sustained programs extending further to adolescence are necessary.

KEYWORDS:Smoking, intervention, cessation, children, early adolescence.

I. INTRODUCTION

[1].Smoking is one of the leading preventable public health problems worldwide, resulting in millions of deaths every year. In Europe, the smoking rate is 1:3, with an estimated 650,000 European citizens dying each year due to smoking. Eighty to one hundred thousand young people are addicted to nicotine daily and 250 million today's children will die prematurely from future smoking-related illnesses.

[2.3].The cooperation and involvement of multiple stakeholders, voluntary groups, non-governmental organizations, etc. ensures the broadest possible impact of the anti-smoking

campaign. Smoking initiation rates during early adolescence (11–15 years) showed a marked increase after 1990 in all regions (except for North European males) but especially in West Europe, where they reached 40 per 1000/year around 2005. In 2014, 6 % of the EU population over 15 years of age consumed at least 20 cigarettes per day, and around 13 % consumed less than 20.

[4].Considering various research data proving that the mean age of onset of smoking is between 12 and 15 years of age, the need for early intervention in the Primary School is imperative. In the high grades of elementary school, as well as in the junior school, the child does not have an attitude or view of the cigarette while being influenced by his or her school and family environment. Thus health and intervention programs can be more effectively implemented in the primary and the school environment in general, where children spend most of the day interacting with their peers.

The aim of this review was to investigate the efficacy of smoking cessation intervention programs at elementary school level.

II. METHODS

The review included full original research papers, both qualitative and quantitative studies. Medline and Google Scholar were the databases searched, for the one decade period 2009-2019. Intervention was viewed in a broader sense including schools with antitobacco policy and curricula. Studies comprising children below 12 years old were included. The research was limited in English language articles. Theses, reviews, editorials and commentaries or studies comprising students were excluded from the study. Initially the searching yielded 270 articles, using the following key words: smoking, school, prevention, intervention, children, primary school, health education. All articles published in the area were initially considered, as data in the field are scarce and any relevant information is of value. After reading the abstract, the research was continued on

to 10 articles which presented the greatest relevance to the subject and they were finally included in the study.

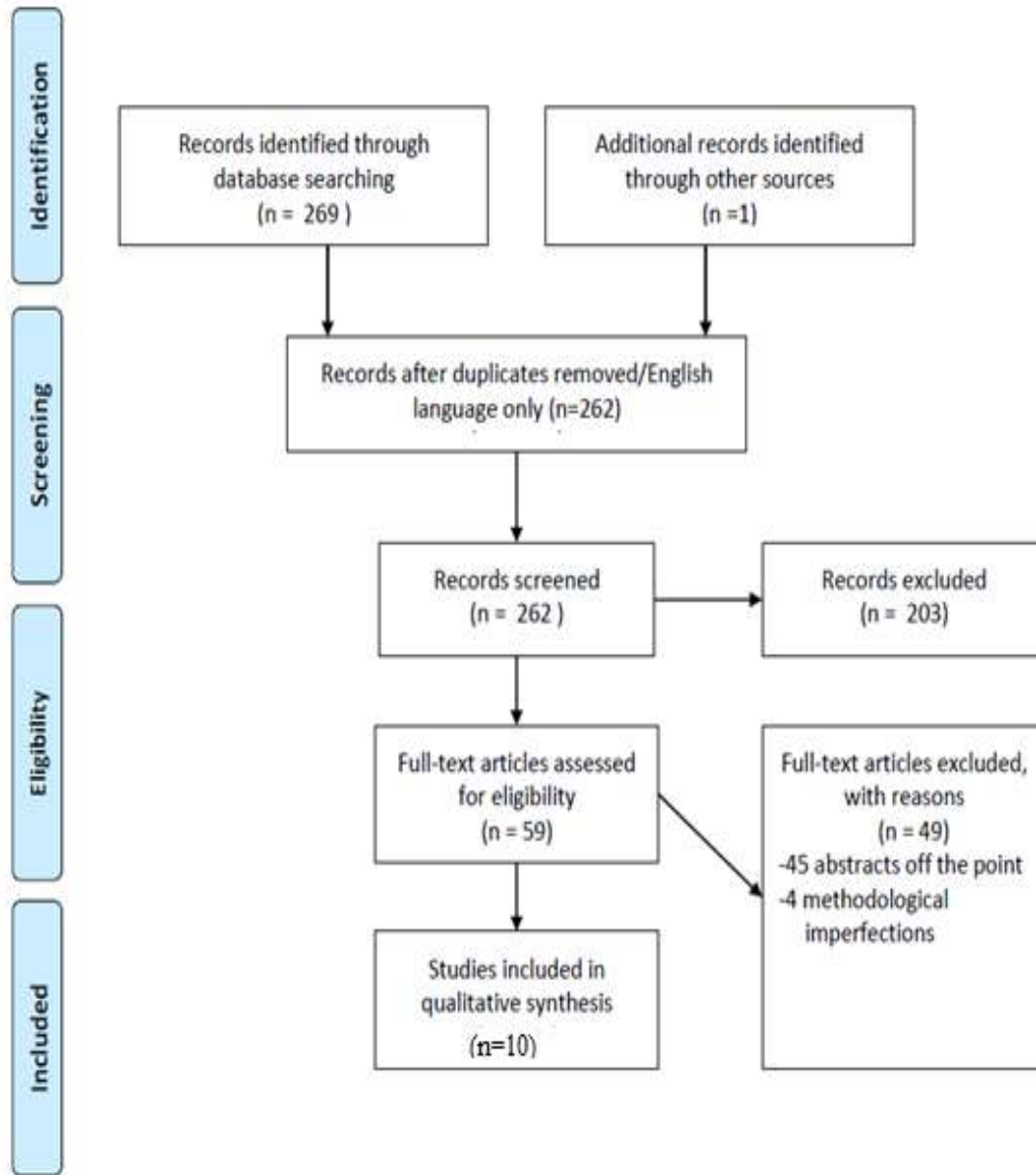


Fig 1. Flow diagram of the study

III. RESULTS

Four RCT's, 4 longitudinal studies (one of them mixed method-quantitative and qualitative-design) and 2 cross-sectional studies were traced. Seven of them achieved statistically significant end-points, although fully significant results according to primary outcomes were observed in only 3 studies. In particular:

RCT's: [5]. The RCT of Isensee et al. (2010) comprised 3490 students with a mean age of 12.6

years. It was found that participation in the intervention program had short-term effects on current smoking among baseline occasional smokers and decreased the probability of progressing from experimental to established smoking over the entire study period.

[6]. In the randomized community prevention trial of Wang et al. (2012) 678 urban first-grade children were followed annually until 18 years old. No significant differences were found

in the proportion of ever smoking tobacco among the control and intervention groups once tobacco was offered. However, the risk of being offered tobacco was reduced intervention groups relative to the control group.

[7].In the “Eigenständig werden” study (2014, RCT) 3444 students from 172 classes with a mean age of 10.37 years (SD=0.59) were enrolled. Six months after the end of program implementation, students of intervention classes showed significantly lower rates for lifetime smoking (p=0,026), marginally lower incidence of smoking (p=0.047) a higher increase of smoking-related knowledge (p<0.001) and a greater change in attitudes towards a more critical perception of risks and disadvantages of smoking (p=0.002). Nevertheless, no group differences were found for current smoking, perceived norms of smoking and self-efficacy to refuse cigarette offers.

[8].In the RCT of Brinker et al.(2017), a total of 1504 children aged 10-15 years were enrolled. From baseline to the two follow-up time points, the prevalence of smoking increased from 3.1% to 5.2% to 7.2% in the control group and from 3.0% to 5.4% to 5.8% in the intervention group. The intervention appears to prevent smoking onset (especially in females and students with a low educational background) but does not appear to initiate quitting. An unusually high loss-to-follow-up effect led to no significant results to report.

Longitudinal quantitative:[9].In the study of Crone et al.(2010) comprising 1815 elementary school children aged 9-1 years old, limited effects were observed at the end of elementary school. One year later in secondary school significant effects on behavioral determinants and smoking were found.

[10].In the Tahlil et al.(2015) study in Indonesia including 427 children aged 11-14 years old, No significant effects on smoking intentions were observed at 6 months follow-up although knowledge and attitudes were marginally

improved. The researchers concluded that culturally adopted, school-based programs may provide long term benefits smoking knowledge and attitudes.

[11].In the SmokeFreeSports (2016) 961, aged 9-10 year old children from North-West England. 32 primary schools received a programme of sport-for-health activities over 7 months; 11 comparison schools followed usual routines. Focus groups showed that SFS made children determined to remain smoke free and that the interactive activities aided children’s understanding of smoking harms.

[12].The Szwatkowski et al.(2017) exploratory longitudinal study in children aged 11–13 in two UK schools (4456 from intervention schools and 1692 controls) found significant difference in the odds in an intervention school being an ever smoker or susceptible never smoker compared with controls and no significant difference in the odds of ever smoking.

Cross-sectional: [13].The cross-sectional study of Huang et al.(2009) in Taiwan comprised 2350 aged 10.9±1.2 years old elementary school children. The risk of ever-smoking in males and females was significantly associated with absence of antitobacco health education activities or curricula [adjusted odds ratio [aOR =6.23, 95% confidence interval (CI): 2.55–15.24] and [aOR=3.08, 95% CI: 1.41–6.72) for males and females respectively.

[14].In the study of Lovato et al.(2010) it was found that the mean smoking prevalence was highest for schools with only a school-developed policy (2.6%), followed by schools with their own policy and a district policy in place (1.6%), schools with only a district policy in place (1.2%), and schools with no policy (0.7%).Policies that prohibited smoking on school grounds at all times predicted lower smoking prevalence at the school level but not at the individual level.

Author	Year of Publication	Nuber of participants	Age (years)	Type of study	Main Outcome	Significance
Huang et al.	2009	2350	10.9±1.2	Cross-sectional quantitative	↑ risk of ever-smoking in males and females in schools with no antitobacco policy	SS
Lovato et al.	2010	27,892	11-14	Cross-sectional, quantitative	Smoking prevalence/int	SS

					ention	
Crone et al.	2010	1815	9-11	Longitudinal, quantitative	Smoking behavioral determinant/intention	NSS (elementary school) SS (social determinants/intention, secondary school)
Isensee et al.	2010	3490	12.6±0,7	Longitudinal, quantitative RCT	Smoking prevalence/intention	SS**
Wang et al.	2012	678	First graders	Longitudinal, RCT, Quantitative	ever smoking	NSS
Isensee et al.	2014	3444	10.4 ±0.6	Longitudinal, quantitative RCT	Smoking attitudes, smoking self efficacy, smoking prevalence/incidence	SS****
Tahlil et al.	2015	control group = 128, intervention groups = 299	11-14	Longitudinal, Quantitative	Smoking intention, smoking knowledge and attitudes	NSS (intention) SS (marginally) knowledge/attitudes)
McGee	2016	961	9-10	Longitudinal, Quantitative/Qualitative	Smoking attitudes	SS
Brinker et al.	2017	1504	10-15	Longitudinal, quantitative RCT	Smoking prevalence	NSS*
Szwatkowski et al.	2017	445 intervention schools children	11-13	Longitudinal, quantitative	Ever smoking	NSS

		1692 controls				
SS: Statistically Significant NSS: Non-Significant * high loss-to-follow-up effect** **short-term effects on current smoking ***All end-points but current smoking, perceived norms of smoking and self-efficacy to refuse cigarette offers.						

TABLE 1. BRIEF DESCRIPTION OF THE STUDIES INCLUDED IN THE PRESENT REVIEW (CHRONOLOGICAL ORDER)

IV. DISCUSSION

[15]. This review raised some serious concerns about tobacco control programs in primary education level. The small number of high-quality intervention studies suggest that the behavior of pre-adolescents has not been addressed effectively by public health policies.

[16]. On the other hand anti-smoking health programs appear to be able to improve the knowledge and attitudes immediately after completion, after some time, the only remaining improvement seems to be knowledge that is not usually translated into action. Although people are fully aware of their health risks from certain behaviors do not necessarily lead to a change in their health behaviors. At best this information will be incorporated later, but even so, it is considered worthwhile to implement such programs. That is, the benefits of health education programs are short-lived. The prevention programs should be sustained over time to maximize results. Anti-smoking programs reviews shows that incorporating physical exercise curricula further enhance the effort of smokers to reduce or quit smoking.

[17]. In general, the school is considered a favorable place for implementing intervention programs aimed at avoiding smoking, as the programs can and do target a large number of students and the approach can be multifaceted. Health education programs emit persuasive messages and the key to the effectiveness of health education is “communication”. However, entering late adolescence youth face serious challenges from their peers and tobacco companies and strong external influences obscure their attitude against smoking. Improving knowledge about the harmful effects of second-hand smoke, does not necessarily mean improving knowledge about the harmful effects of smoking, attitudes about the acceptability of cigarettes, beliefs about the tobacco industry, or self-efficacy to resist peer pressure to smoke. Moreover, it has been noticed that after exposure to the program, intervention students were more likely

to misreport their smoking status and to report unfavorable attitudes about classmates who smoke.

It seems that informational and affective programs do not work to change behavior. Stakeholders should focus on research-proven programs and avoid spending time and money with little or no prior evidence of program effectiveness. Indeed, school-based prevention could produce significant and practical reductions in youth smoking initiation and levels, given that some prerequisites are hold, according to WHO recommendations. More randomized high-quality studies are needed, as definitive conclusions about the type of most effective interventions cannot be drawn and questions about the role of health professionals in them. Evidence based, reliable, culturally tailored and sustained school-based programs should be carefully implemented in the community in order to maximize anti-smoking effect.

V. CONCLUSION

Elementary school based smoking cessation programs produce limited effect. Sustained programs extending further to adolescence are necessary.

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