

Mr. Starbene e il Club dei Vincenti: assessing an anti-smoking campaign for school children

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Abstract

Background: People start smoking during childhood and adolescence and the age at which children start smoking is gradually falling: in 2005, it rose to 3.3% in the 11-to-14 year age group whereas in 2002 it was only 1.4% in the same age group.

Methods: "Mr Starbene e il Club dei Vincenti", part of a regional program, *Liberi dal Fumo*, was assessed through an experimental non-randomized study, by involving parents and teachers, using short questionnaires. The project's objective was orienting fourth and fifth grade children towards a no-smoking lifestyle. The enrolled population was composed of 5,552 students in the treatment group and 4,758 controls.

Results: after two years, the number of children who *had tried smoking but no longer smoked at the moment* decreased by 16.3% in the treatment group, while it increased by 12.5% in the controls ($p=0.000$). The number of children who considered smoking a few cigarettes/day dangerous was higher in the treatment group (+8%) than in the controls (+4.4%) which suggests significant results vis-à-vis perceived smoking hazards. Children who claimed they would not smoke in the future decreased by 57.1% in the treated group as compared with a 21.4% reduction in the control group ($p<0.001$); children who said they would accept an offer of a cigarette decreased in the treated group (-12.5%), but not in the controls ($p<0.001$). The study pointed out also the influence of role-models in children attitudes toward smoking.

Conclusions: The positive results of this project give rise to hope for the future, even if long term evaluation is necessary. The good scores obtained from the teachers are very positive because they make the project work.

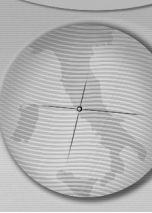
Key words: cigarette smoking, adolescents, primary school, prevention

Introduction

The incidence in Italy of adult smokers in 2006 was 22.7% in the 14 and over-14 year-old population (28.8% males, 17.0% females.) [1] The highest incidence of smokers (29.6%) was in the 25-44 year age group. [1] The percentage of habitual smokers in the 11-to-19 year age group was similar to the rest of Europe: 9.6% of those in the 15-to-17 age group smoke regularly, with a higher incidence in males (11.6%) than females (7.5%). [1] The age at which children start smoking is gradually falling: in 2005, it rose to 3.3% in the 11-to-14 year age group whereas in 2002 it was only 1.4% in the same group. [2, 3] People start smoking during childhood and adolescence: 44.8% of smokers begin smoking between the ages of 14 and 17 and 37.3% between the ages of 18 and 21. [4, 5]

In the last ten years, the greatest contribution to reducing cancer mortality in Northern America and Western Europe has been brought about by a decrease in cigarette consumption. Prevention thus represents the single most effective measure in cancer control and, by itself, is quantitatively more important than all diagnostic and therapeutic improvements put together. [6] A recent CDC publication by the Task Force on Community Preventive Services has highlighted the particular effectiveness of various measures (smoking bans, increased cost of tobacco products, mass media anti-tobacco education campaigns) when identifying the main strategies used to fight tobacco addiction. [7, 8]

Promotion of health education in schools is the fundamental priority in activities designed to stop young people from smoking. No-smoking



areas and initiatives for smoking cessation do not reduce the incidence of smokers on university campuses as a recent study at the University of Arkansas has highlighted. Campaigns that avoid initiation rather than support cessation need to be privileged. [9] School prevention campaigns really do contribute to improving the health of future generations, as schools represent an ideal setting for this type of activity; the period of transition from adolescence to adulthood is the right moment to intervene to prevent future chronic disease as is amply demonstrated by three successful school health promotion campaigns directed to children and adolescents (Coordinated Approach to Child Health -CATCH-, Planet Health and Not-On-Tobacco). [10, 11, 12]

Methods

This study assesses the findings of the *Mr. Starbene e il Club dei Vincenti* campaign (translated in English it means *Mr. Fitness* and the *Winners' Club*). This is a Lombardy Region smoking-prevention project targeting primary schoolchildren which is part of a more far-reaching campaign called *Liberi dal Fumo (Smoke-free)* involving children from kindergarten to high school. The latter is organized by the Lombardy Region in collaboration with the University of Pavia and is designed to prevent tobacco smoking in young people by implementing a range of health education activities for each school grade. Within this overall project, the *Mr. Starbene e il Club dei Vincenti* campaign is a non-randomized experimental study, addressed to teachers, children and parents of fourth and fifth year grades in primary schools. Its overall goals are threefold:

- (i) promoting the development of knowledge and behavior that leads to a healthy, no-smoking lifestyle;
- (ii) reducing the number of children who try to smoke;
- (iii) stimulating their intention to remain *smoke-free* in the future.

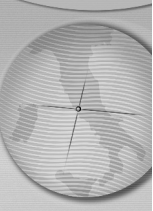
The Lombardy Health District Units participating in the study (13 out of a total of 15) invited all the primary schools in their catchment area to participate in the project; participation was free. The sample unit was the class rather than the student; a control class was needed for each of the 235 treatment classes. Cluster matching was carried out with control classes being identified. The matching criteria considered were: community (urban, suburban, rural), number of inhabitants and socio-economic characteristics

(industrial, agricultural etc). 10,980 children in different schools throughout the Lombardy Region participated between 2003 and 2006. The treated population consisted of 5,880 children (males 51.6%, females 47.8%); the 5,100 children (51.4% males and 48.2% females) were recruited as a control population. They filled out the questionnaire at the beginning of the fourth and at the end of the fifth grade. The families of treated students who participated were 5552, the teachers who carried out the program were 278.

The project was developed over a six-year period of activity (2001- 2006) and may be summarized in terms of 5 steps:

- Planning (2001-02): when the program was written and studied according to EBM and pilot projects carried out in the Lombardy Region;
- Proposition and training (2002-03): the project was presented to health workers in Local Health Units, who, in turn, presented the project to schools and trained teachers;
- Implementation (2002-2006): the project was implemented;
- Evaluation and assessment (2005-2006): data processing;
- Publication and diffusion (2006-2007): findings were presented to schools and the scientific community.

The teachers, who implemented the project, were trained by health workers in two, two-hour meetings in relation to epidemiological and health information. Parents were involved in some of the activities that children were required to carry out in their homes. The schools were asked to invite parents to a meeting illustrating the project's goals. The educational activity in the fourth grade consisted in virtual encounters that the children had with *Mr. Starbene (Mr. Fitness)*, an imaginary figure incarnating a representative of the Health Ministry, who introduced the children to tobacco-related health problems by explaining something about the human body and healthy lifestyles. To get the children involved in the various issues raised by smoking, Mr Starbene wrote five letters to children describing the problems he encountered in his job and to enlist their help in fighting the Tobacco family (cigarettes, pipes and cigars) and Nicotine. The letters were actually written by teachers who explained the hazards of smoking, its consequences and why people start smoking; at the end of the activity, children actually met *Mr. Starbene*, in the shape of a local health district member, who asked them to join a club: *Il Club dei Vincenti (The Winners' Club)* so as to create a partnership against smoking. By



supporting this club the children received a membership card and some gadgets. Parents were invited to read a little book to their children called *Storie della Buona salute (Good Health stories)* which was about passive smoking and children. In the fifth grade, the activity was a board game whose function was to remind the children about what they learned the year before.

Project assessment was carried out by analysing the students' questionnaires (the first questionnaire filled in at the beginning of the project, the last at the very end); parents and teachers filled out different questionnaires at the end of the activity, exploring the various aspects of the project such as interest, involvement, implementation and feasibility. The specific topics evaluated were:

- Participation (number of classes participating/invited)
- Students' knowledge about tobacco and health problems
- Children's intention to become smokers in future
- Number and percentage of students who had tried smoking
- Smoking habits in families
- Parents' participation
- Parents' interest
- Teachers' interest

The data were processed by the Department of Preventive Medicine, Hygiene Section, University of Pavia by SPSS. Statistical significance was calculated by the Chi Square test.

Results

The 24% of all fourth grade children in the Lombardy Region were enrolled. The drop-out rate was 5.6% in the treated group and 6.7% in the control group. The main causes were: absence from school, the merging of classes and staff changes (sometimes new teachers refused to implement the program for the second year). Comparing the answers the children gave at the beginning and at the end of the program, the number of children who *had tried smoking but no longer smoked at the moment decreased* by 16.3% in the treated group (from 4.9% to 4.1%), while it increased by 12.5% (from 4.0 to 4.5%) in the control group ($p=0.000$). The number of children who *had never smoked* increased in the treated group (from 94.8% to 95.8%, $p=0.013$) and decreased in the control group (from 95.6% to 95.3%, $p=0.506$). The prevalence of current smokers decreased from 0.3% to 0.2% in the treated group and from 0.4% to 0.1% in the control group.

The percentage of girls who *had tried but no*

longer smoked at the moment decreased more than the percentage of boys in the treated group (-36.7% females; -9.0% for males) and also increased less in the control group (+4% females; +18.5% males). Children in the *Smoking is dangerous for your health even when you only smoke a few cigarettes a day* category increased by 8% ($p=0.000$) in the treated group and by 4.4% in the control group. The difference between treated and controls is highly significant ($p=0.000$). Table 1 shows that at the end of fifth grade, the incidence of children in the *smoking is only dangerous when you smoke more than 20 cigarettes/day* category decreased without any significant difference between the two groups (-37.1% in the treated group; -34.2% in the control group). Children in the *smoking is not dangerous for your health* category increased less in the treated group (+3.8%) than in the control group (+90.5%) ($p=0.000$) while those in the *don't know if smoking is dangerous* category decreased more in the treatment group (62.2%) than in controls (37.8%). ($p=0.000$).

Table 2 shows that when asked *Would you smoke if a friend offered you a cigarette?*, there was no change in the affirmative replies given by the control group children, while there was an insignificant decrease in the treated group (-12.5%; $p=0.703$). The *don't know*s increased in both treated (+32.2%; $p=0.000$) and control (+41.5%; $p=0.000$) groups with a significant difference between the two groups ($p=0.008$). When it comes to analyzing the intention to become smokers in future, Table 3 shows that the children in the *will smoke when older* category decreased in both groups (treated: -57.1%; $p=0.000$; control: -21.4%; $p=0.000$) but significantly more in the former than in the latter ($p=0.000$). The prevalence of children in the *will not smoke when older* category increased in the treated group (+3%, $p=0.000$) but decreased in controls (-1.62%; $p=0.000$).

The significance of smoking habits among children's family members was explored. Table 4 shows that children with a smoker in the family tried smoking more than children in families with no smokers (treated group: 5.9% vs 2.5%, $p=0.000$; control group: 6.4% vs 2.8%, $p=0.000$). Furthermore, among treated children, the incidence of those who thought that smoking a few cigarettes was dangerous was 87.7% when at least one family member smoked but 90.4% in abstinent families ($p=0.002$); the same trend was found in the control group: 83.4% vs 87.4% ($p=0.000$). Significant differences were found in both treated and control groups depending on the presence of smokers in the family: 88.7% of the

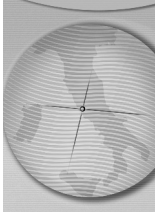


Table 1. Knowledge about smoking hazards (%).

Do you think smoking is dangerous for your health?	TREATED FOURTH GRADE N. 5839			TREATED FIFTH GRADE N. 5529			Δ (Treated)	CONTROLS FOURTH GRADE N. 5072			CONTROLS FIFTH GRADE N. 4722			Δ (Controls)
	Males	Females	Total	Males	Females	Total		Total	Males	Females	Total	Males	Females	
Yes, even when you only smoke a few cigarettes.	81.6	83.3	82.4	87.5	90.6	89.0	+ 6.6	79.5	84.4	81.9	84.1	86.8	85.5	+ 3.6 ^a
Yes, when you smoke more than 20 cigarettes a day.	10.6	10.3	10.5	7.8	5.3	6.6	- 3.9	12.9	9.7	11.4	7.7	7.2	7.5	- 3.9 ^b
No, I don't think it's dangerous for my health.	3.0	2.3	2.6	3.0	2.5	2.7	+ 0.1	2.3	2.0	2.1	4.5	3.5	4.0	+ 1.9 ^c
I don't know.	4.8	4.1	4.5	1.8	1.6	1.7	- 2.8	5.3	3.8	4.6	3.7	2.4	3.0	-1.6 ^d

Δ = difference of the items before and after the program; a: $p = 0.000$ (treated vs controls -fifth grade-); b: $p = 0.959$ (treated vs controls -fifth grade-); c: $p = 0.000$ (treated vs controls -fifth grade-); d: $p = 0.000$ (treated vs controls -fifth grade-)

Table 2. Intention to smoke a cigarette offered by a friend (%).

Would you smoke a cigarette if a friend would offer you one?	TREATED FOURTH GRADE N. 5836			TREATED FIFTH GRADE N. 5532			Δ (Treated)	CONTROLS FOURTH GRADE N. 5072			CONTROLS FIFTH GRADE N. 4735			Δ (Controls)
	Males	Females	Total	Males	Females	Total		Total	Males	Females	Total	Males	Females	
Yes.	2.1	1.0	1.6	2.1	0.7	1.4	- 0.2	1.7	0.7	1.2	1.6	0.8	1.2	0
I don't know.	6.1	5.8	5.9	9.0	6.5	7.8	+ 1.9	7.8	5.1	6.5	10.2	8.2	9.2	+ 2.7 ^a
No.	91.8	93.2	92.5	88.9	92.8	90.8	-1.7	90.5	94.1	92.2	88.3	91.1	89.7	- 2.5 ^b

Δ = difference of the items before and after the program; a: $p = 0.008$ (treated vs controls -fifth grade-); b: $p = 0.006$ (treated vs controls -fifth grade-)

children in the treated group stated they did not believe they would become smokers in future, while the incidence for children with smokers in their family was only 78.4% ($p=0.000$); the same trend was reflected in the control group: 85.3% where there were no smokers in the family but only 72.2% where smokers were present ($p=0.000$).

The decision to involve parents through activities in the home was taken in the awareness that family

involvement was essential for the project's outcome; their interest was assessed through a questionnaire that the children took home at the end of fifth grade. The questionnaire was only given to the parents of children in the treated group with a 76.4% response rate.

Table 5 shows that most parents knew their children had participated in a smoking prevention project (95%) and that they approved of this initiative (97.9%); 66.3% co-operated with the

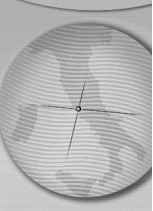


Table 3. Intention to smoke in the future (%).

Do you think you'll smoke when you grow older?	TREATED FOURTH GRADE N. 5847			TREATED FIFTH GRADE N. 5530			Δ (Treated)	CONTROLS FOURTH GRADE N. 5071			CONTROLS FIFTH GRADE N. 4731			Δ (Controls)
	Males	Females	Total	Males	Females	Total		Total	Males	Females	Total	Males	Females	
Yes.	4.1	1.4	2.8	1.9	0.6	1.2	- 1.6	4.1	1.4	2.8	2.9	1.4	2.2	- 0.6 ^a
I don't know.	17.8	14.9	16.4	18.2	12.8	15.6	- 0.8	18.9	15.7	17.4	21.9	16.5	19.2	+ 1.8 ^b
No.	78.0	83.7	80.8	80.0	86.7	83.2	+ 2.4	77.1	82.9	79.9	75.2	82.1	78.6	- 1.3 ^c

Δ = difference of the items before and after the program; a: p = 0.000 (treated vs controls -fifth grade-); b: p = 0.000 (treated vs controls -fifth grade-); c: p = 0.000 (treated vs controls -fifth grade-)

Table 4. Relationship between intention to smoke and family habits (%).

	Are there any smokers in your family?				
		TREATED N. 5530		CONTROLS N. 4740	
		Yes	No	Yes	No
Do you think you'll smoke when you grow older?	Yes/ I don't know	21.6	11.3 ^a	27.8	14.7 ^b
	No	78.4	88.7	72.2	85.3
		100	100	100	100

a: p = 0.000 (treated with smokers in their family vs treated without smokers in their family -fifth grade-)

b: p = 0.000 (controls with smokers in their family vs controls without smokers in their family -fifth grade-)

home-development aspects of the project by reading stories to their children. However, only 25.1% participated in the presentation meeting organized by schools. The project was a good opportunity to talk about smoking problems and hazards with family members (58%) and to encourage a member of the family to quit (22.8%). It also strengthened the intention to become a "non-smoker" in the future (52%). Only 6.7% of the parents replied that the project was useless.

278 teachers also answered a questionnaire in which they were asked to assess different aspects of the project with a score from 1 to 10 (Table 6).

The teachers assessed the program as being useful, adequately organized and easy to implement; they thought the children were interested but that parents were insufficiently involved.

Discussion

The *Mr Starbene* ed il *Club dei Vincenti* project improved children's knowledge of tobacco hazards; any improvement in children's knowledge and awareness of these hazards may be construed as the first step towards helping children resist social pressures given that parents'

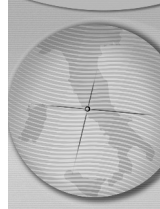
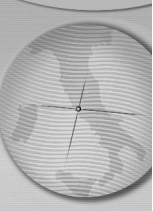


Table 5. Findings from the parents' questionnaires (%).

Results From Parents Questionnaires N. 4242		
	Yes	No
<i>Did you know that your son/daughter participated in a project for smoking prevention?</i>	95.0	5.0
<i>Do you approve of this initiative?</i>	97.9	2.1
<i>Have you seen the educational tools?</i>	66.3	33.7
<i>Did you participate in the presentation meeting?</i>	25.1	74.9
<i>Has the project been an opportunity to talk about smoking hazards in your family?</i>	58.0	42.0
<i>Did the project encourage at least one smoker in the family to quit?</i>	22.8	77.2
<i>Did the project strengthen the intention not to become a smoker?</i>	52.0	48.0
<i>Did the project have any effect?</i>	6.7	93.3

Table 6. Findings from the teachers' questionnaires.

TEACHERS			
TOPICS	NUMBER OF RESPONDENTS	SATISFACTION LEVEL (MEAN VALUE)	s.d.
<i>Overall usefulness of the project</i>	277	8.91	± 1.362
<i>Relevance of the suggested didactic activities and proposed materials</i>	277	8.55	± 1.456
<i>Ease of implementation</i>	274	8.13	± 1.596
<i>Children's interest and participation</i>	277	8.90	± 1.434
<i>Parents' interest and participation</i>	261	5.43	± 2.719
<i>Completeness and clarity of the teachers' guide</i>	193	8.84	± 1.499



behaviour has a strong influence over children. Non significant changes in prevalence of current smokers were found both in treated and in controls. This finding could be attributed to the extremely low prevalence of smokers; the rate of children who tried smoking decreased.

One finding may seem senseless: after two years there was a decrease in the number of children admitting they had never tried smoking: this may be because the children were too embarrassed to admit that they had tried. The children's replies to questions about the dangers for health caused by smoking are very useful when assessing the project's effectiveness in improving knowledge about smoking hazards. Certainly, improvements have been achieved elsewhere, i.e. among children who did not participate in this project, by fifth grade science courses. However, those who participated in the project demonstrated a better understanding. Establishing whether the children who participated in the project are better equipped to resist as compared with those who did not, is essential when evaluating the project's long-term effectiveness.

Girls were more interested and more aware about tobacco hazards than boys. The program was more effective overall with girls than boys: boys were more interested in precocious tobacco experimentation; the data relating to the incidence of young smokers in Italy are in keeping with this project's findings [3]. The differences between treated and control children vis-à-vis peer influences demonstrates the project's limited effectiveness when inviting children not to smoke; girls seem to have achieved better results than boys in their answers, perhaps because they are better equipped to resist social pressures.

The most important finding is the intention to be non-smokers in future; hopefully, children in the treated group dissipated their doubts about smoking more significantly than children in the control group; better results were achieved about future intentions from girls than from boys. The influence of the behaviour of family members on 10-11 year-old children plays an important role in education and every project involving children has to consider the family environment: important and significant differences were found in children from families with smokers, regardless of project's development and implementation; habits of parents or older brothers and sisters are more important for children than what is taught at school; as other studies have demonstrated, they often want to conform now and in the future to their role models [14]. Parents' involvement in health education projects is thus one of the most

important strategies when attempting to obtain changes in attitude.

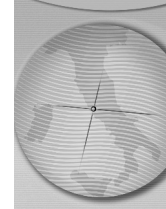
The parents' questionnaire was designed to establish whether parents were really interested in the project and whether they considered the project useful. The majority agreed that this was the case and many of them spoke about smoking hazards with their children; this is an additional support for the project and would appear to reinforce the messages children receive at school. The small percentage of parents participating in the presentation meeting was due to the decision of many schools to inform parents by letter, instead of organizing a meeting to illustrate and explain the project; 22.8% of responses from parents indicated that the project provided an opportunity to "encourage at least one smoker family member to quit"; this appears to be a good result, considering that parents did not mention whether they were smokers or not.

Parents' co-operation and positive evaluation was also good considering the significance the family has on children of this age. For parents, too, the project was a good opportunity because they often did not know how to tell their children about their inability to give up an unhealthy habit. However, the real effectiveness of family-based smoking-prevention programs is still unknown as different studies have not yielded consistent findings. [13,14]

Parental interest was not perceived by teachers, who awarded low marks in this respect (5.43). Teachers' highest mean score (8.91) related to the project's usefulness: this evaluation is very important because it was they who followed the students during the entire project and were in the best position to understand whether children were interested or not. Every item had a score higher than 8 and good evaluations were obtained vis-à-vis project feasibility and ease of implementation; the teachers are going to repeat the project in different classes and their active participation and interest was essential for the reproducibility of the project.

The study design could be considered flawed by the choice of non-randomized primary school classes. This one was the only feasible way to involve teachers; however the wide participation at regional level and the matching of control classes should be considered sufficient to counteract the cluster effect of smoking behaviour.

The replies given by the children certainly raise good hopes for their future. Long-term assessment is, however, necessary to understand whether the children will really keep up their decision not to smoke. Boys and girls generally start smoking in



adolescence, the habits of friends and families playing an important role in the decision to smoke or otherwise.

Given that it is the teachers who make the project work, the good scores obtained from them are very positive. Apart from interacting with children, they often had to face up to some quite embarrassing questions; for some of them, the project was an opportunity to quit smoking. Clearly, a program to convince children not to smoke is useless when strong role models act in the opposite direction; the implementation of preventive programs with strategies to help parents quit may be one way of ensuring children to not start smoking.

Further assessment of the long term effectiveness of the project will allow for better evaluation.

Acknowledgements

The program "Liberi dal fumo" was carried out as part of the Italian CINDI program.

Special appreciation is expressed to the Prevention Departments of Lombardy Region's Local Health Agencies.

The program was financed by the Fondazione CARIPLO.

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