Research Article

A QUASI EXPERIMENTAL STUDY ON THE EFFECTIVENESS OF EDUCATIONAL INTERVENTION IN CHANGING KNOWLEDGE AND ATTITUDE REGARDING TOBACCO USE AMONG SECONDARY SCHOOL STUDENTS IN AN URBAN SLUM

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ABSTRACT

Background: School based education intervention programs have been effective in increasing awareness to prevent children to start tobacco use when they are most vulnerable. **Objective**: 1.To find out the magnitude of smoking & smokeless tobacco use among the study population. 2. To assess the knowledge of study population regarding tobacco use. 3. To find out the improvement in knowledge among the experimental & control group after educational intervention; if any. **Materials & Methods: Design**: Pre-Post quasi experimental study with intervention and control group. **Intervention**: Baseline pre-intervention data collected from all the participants of both the groups based on pre-tested, semi structured questionnaire. Three sessions of educational intervention at monthly interval were taken for experimental group only. Post - intervention data collected from all the 704 participants and analyzed. **Study population**: Government school students of classes 7th, 8th & 9th of 12-16 years age group in an urban slum of Kolkata, West Bengal **Results**: Smokeless form of tobacco is the most prevalent form (67.4%). Post intervention knowledge about tobacco use has increased in experimental study group when compared to control group as P value is statistically significant. **Conclusions**: The educational intervention program improved knowledge of school children.

INTRODUCTION

Tobacco use is one of the most alarming public health problems facing the world today.[1] WHO estimates that one out of two young people who start smoking and continue smoking throughout their lives will ultimately be killed by a tobacco-related illness.[2] It is estimated that half a billion people now alive will be killed by tobacco products. [3] The annual mortality from tobacco chewing in South Asia alone may well be above 50,000 deaths a year. [4]. Its legal use & social acceptance have made it virtually more dangerous than any other drug abuse. The majority of tobacco users begin while in their teenage years or earlier. Around ninety percent of adult smokers begin smoking during adolescent age, and the initiation of daily smoking most often begins in class six to nine.

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People who start using tobacco early have more difficulty quitting, are more likely to become heavy smokers and are more likely to develop a smoking-related disease. [1, 4] One-third to one-half of adolescents who experiment with cigarettes goes on to become regular smokers. One study found that among those who experimented with cigarettes, about one-half had become regular smokers within one year. Smokers who begin at young ages also find it hardest to quit. Studies carried out in many countries show that if young people do not begin to use tobacco before the age of 20, they are unlikely to start smoking as adults. [5] Preventing tobacco use among school students decreases school days missed because of respiratory illnesses. [6] Children spend almost a third of their waking time in school, and much of the peer pressure kids feel regarding whether or not to smoke occurs in school. School-based prevention programmes usually target youth in their early teenage years, when smoking experimentation and initiation is most common. Accordingly, school-based programs can reach children and teenagers when they are most vulnerable to start

tobacco use or before their tobacco use has become a strong addiction. These programs are most likely to have strong, lasting effects when supplemented by strong anti-smoking policies at the schools.

MATERIALS & METHODS

Study design

This was a pre-post quasi-experimental study. Subjects were divided into two groups, the intervention and control group. The intervention group received three repeated classroom based audio-visual lecture and interactive session of around 40 minutes at one month interval on 'prevention of tobacco Use' while control group had not received any education till the completion of study. Finally at the end, control group were given same lecture for ethical reasons. One month before the intervention began, and, separately, a month after it ended, the intervention group and the control group were tested, so that effects of the intervention could be ascertained.

Study population and sampling

Study population was the government school students of classes 7th, 8th & 9th of 12-18 years age group in a slum of Kolkata, West Bengal. 6 out of total 46 schools under field practice area of urban health centre (UHC); Chetla were selected based on age, number of students, socio-economic status, and demographic characteristics. All the 6 schools gave consent for the study. 6 schools divided into 2 groups (intervention and control group) of 3 schools in each by lottery. Students of class 7th, 8th & 9th of age group 12-16 years who gave consent for participation till the end were eligible for the study. A total of 371 students in intervention group and 362 in control group participated in the study. Anonymous nature of the study was explained and participants were enrolled with serial number, name, address & phone number if available for follow up purpose. A pretested, semi-structured, anonymous questionnaire was administered to participants of both the group to find out baseline characteristics. A total of 367 & 360 effective questionnaires were collected from intervention & control group respectively. After one month 1st intervention was given, same was repeated twice at one month's interval. Post-test questionnaire were collected from both the groups. A total of 354 & 350 effective questionnaires were collected this time from intervention & control group respectively.

Study tools

A pretested, semi-structured questionnaire on socio-demographic characters, Knowledge regarding tobacco use was firstly prepared in English language which was translated in local language (Bengali) by a local and again translated back in English by another colleague to check the validity of questionnaire to some extent.

Intervention

Lecture cum interactive session on 'Prevention of Tobacco Use' covering different forms of tobacco use (smoking & smokeless), its components, harmful effects on health & various consequences of tobacco use including second hand smoke was conducted at the first step. During second session, the students were asked to prepare a poster, a poem, a slogan or an essay so that they could effectuate self-research and get more impregnated with the subject. In third session students presented their productions and best three were awarded too.

Data collection & Analysis

Data collected and statistical analysis was performed using SPSS. Data were presented as frequencies, means & Standard Deviation. The 'Chi- square test' was used to compare means & percentage in and between the groups. Statistical significance was set at $p < 0.05$.

RESULTS & ANALYSIS

72.6% & 68.6% students were below 14 years of age in experimental and control group respectively. A total of 25.4 % of experimental study population was of girls whereas it was 28% in case of control group. Only 13.5% & 12% in experimental & control group respectively had family members with highest education graduate and above. 55.6% & 53.7% students were staying in nuclear family in experimental & control group respectively (Table 1).

Table 1 Demographic profile of study population

Parameter		Experimental group (N= 354)		Control group (N= 350)	
Age (yrs)	< 14	257 (72.6)		240 (68.6)	
	> 14	97 (27.4)		110 (31.4)	
		Boys	**Girls**	**Boys**	**Girls**
Gender	< 14	209	48	199	41
	> 14	55	42	63	47
	Total	264 (74.6)	90 (25.4)	252 (72)	98 (28)
Highest education of family members	Graduate & above	48 (13.5)		44 (12.6)	
	Up to higher secondary	101 (28.5)		115 (32.8)	
	Below secondary school	205 (58.0)		191 (54.6)	
Type of family	Nuclear	197 (55.6)		188 (53.7)	
	Joint	157 (44.4)		162 (46.3)	

20.4% (86) of Ever users continue to use tobacco **(Table 2).**

Table 2 Distribution of study population as per Ever user, never user & Current user

Parameter	Experimental group (N= 354)	Control group (N= 350)	Total (%)
Ever user	208	213	421 (59.8)
Never user	97	100	197 (28.0)
Current user	46	40	86 (12.2)

20.4% (86) of Ever users continue to use tobacco.

Smokeless form of tobacco is the most prevalent form (67.4%). Overall 28 % students are using smoking while 67.4 % are using smokeless tobacco (Table 3).

Table 3 Distribution of Current users according to type of tobacco use

Current users	Experimental group (N= 46)	Control group (N= 40)	Total (N=86) (%)
Smokeless	24	34	58 (67.4)
Smoking	17	11	28 (32.6)

Smokeless form of tobacco is the most prevalent form (67.4%). Overall 28 % students are using smoking while 67.4 % are using smokeless tobacco.

Majority of current users started tobacco use with friends (86 %) indicating role of peer pressure (Table 4).

Table 4 Distribution of Current users based on place of tobacco use

Current users	Experimental group (N= 46)	Control group (N= 40)	Total (N=86) (%)
At home	03	01	04 (4.7)
With friends	34	40	74 (86.0)
Other places	3	5	8 (9.3)

Majority of current users started tobacco use with friends (86 %) indicating role of peer pressure.

Majority of ever-users (75.7 %) started tobacco-use during the age of 12-13 yrs (Table 5).

Table 5 Distribution of Ever users based on age at the time of first tobacco use

Ever users	Experimental group (N= 208)	Control group (N= 213)	Total (N=421) (%)
< 11 yrs	16	25	41 (9.8)
12-13 yrs	159	160	319 (75.7)
> 14 yrs	33	28	61 (14.5)

Majority of ever-users (75.7 %) started tobacco-use during the age of 12-13 yrs.

Most of the respondents (90.1%) had at least one tobacco-using family member (Table 6).

Table 6 Distribution of study population based on tobacco using family members

Tobacco using family members	Experimental group (N= 354)	Control group (N= 350)	Total (N=86) (%)
Present	316	318	634 (90.1)
Absent	38	32	70 (9.9)

Most of the respondents (90.1%) had at least one tobacco-using family member.

Post intervention knowledge about tobacco use has increased in experimental study group when compared to control group as P value is statistically significant. Some knowledge about tobacco use has increased in both experimental & control study group; this can be explained on the basis of lateral percolation of knowledge amongst students of same locality **(Table 7)**.

Table 7 Distribution of study population based on knowledge about tobacco use.

Knowledge		Experimental group (N= 354)			Control group (N= 350)		
		Pre intervention	Post intervention	'P' value	Pre intervention	Post intervention	'P' value
Is beedi more harmful than cigarette?	yes	78	304	<0.001ᵃ	64	58	0.521
	No	268	44		258	256	
	Can't say	8	6		28	36	
Is filtered cigarette more harmful than non filtered?	yes	68	197	<0.001ᵃ	74	106	0.02#
	No	174	139		180	162	
	Can't say	112	18		96	82	
Is second hand smoking harmful?	yes	164	272	<0.001ᵃ	129	135	0.868
	No	129	44		130	129	
	Can't say	61	38		91	86	
Number of harmful effects of tobacco use mentioned by respondents	<= 1	68	46	<0.001ᵃ	71	82	0.973
	2-3	223	110		204	189	
	>3	63	198		75	79	

*Post intervention knowledge about tobacco use has increased in experimental study group when compared to control group as P value is statistically significant.
Knowledge about tobacco use has increased in both experimental & control study group as P value of both are statistically significant. This can be explained on the basis of lateral percolation of knowledge amongst students of same locality.

Table 8 Distribution of study population based on attitude about tobacco use

Attitude		Experimental group (N= 354)			Control group (N= 350)		
		Pre intervention	Post intervention	'P' value	Pre intervention	Post intervention	'P' value
If one starts using tobacco, it is difficult to quit	Agree	186	126	<0.001*	172	164	0.607
	Disagree	116	204		96	108	
	Can't say	52	24		82	78	
Tobacco sale to adolescents & children should be banned.	Agree	191	262	<0.001*	104	101	0.067
	Disagree	105	63		101	128	
	Can't say	58	29		145	121	
Smoking at public places should be banned.	Agree	202	294	<0.001*	196	199	0.973
	Disagree	78	32		62	61	
	Can't say	74	28		92	90	

*Post intervention attitude about tobacco use has also changed in experimental study group when compared to control group as P value is statistically significant. This signifies knowledge can influence change in one's attitude

Post intervention attitude about tobacco use has also changed in experimental study group when compared to control group, this signifies knowledge can influence change in one's attitude **(Table 8)**.

Operational definitions

Ever user: a person who has smoked or used tobacco in any form even once or twice.

Never user: a person who has not smoked or used tobacco in any form even once or twice.

Current user: a person who smokes or uses tobacco in any form daily or occasionally in the past 30 days preceding the study.

Second Hand Smoke: a mixture of smoke given off by the burning end of a cigarette, pipe, or cigar and the smoke exhaled from the lungs of smokers.

DISCUSSION

Previous studies showed that nearly 7% in junior high schools had smoked cigarettes, and 0.9% of them smoked on a regular basis. [8] Prevalence of smokers reported by Lu DLT, Yen LL.in his study was 6 to 28.6%. [9] current study showed majority of ever-users (75.7 %) started tobacco-use during the age of 12-13 yrs and most of current users started tobacco use with friends (86 %) indicating role of peer pressure. Similar study by Wen-Chen Tsai, *et al*. [8] showed more than 50% of the students reported that there is at least one family member who smokes. Same study revealed the top three sources from whom students were offered tobacco were family members (38.6%), friends (33.7%), and classmates (19.8%); additionally, students expressed that their family (45.9%) and friends or classmates (24.6%) were the two main sources which induced their smoking. This result echoed the findings of previous research which found that parental and peer smoking were the main factors associated with youth smoking.[10,11] The younger people are when they start smoking cigarettes, the more likely they are to become strongly addicted to nicotine.[7] Studies carried out in many countries show that if young people do not begin to use tobacco before the age of 20, they are unlikely to start smoking as adults.[7] Post intervention knowledge and attitude about tobacco use has found to be increased in experimental study

group when compared to control group. Wen-Chen Tsai, *et al* also found similar results in their study that students' post intervention scores on the knowledge of tobacco hazard, anti-smoking attitudes, and ability to refuse smoking were significantly higher than those in the pre-interventions.[8] This indicated that health education intervention to reinforce teenager's knowledge and attitudes against tobacco use were effective. Stepwise multiple regression analysis of the knowledge of tobacco hazard showed that there was a positive correlation between the intervention program and the improvement in the knowledge of tobacco hazard ($p < 0.05$).

Limitation

Firstly, it was a quasi-experimental design. The personal characteristics in the experimental and control group were highly homogeneous but the purposive sampling may cause selection bias and limit the external validity. Secondly, the investigation time was short i.e. only 3 months and only the short-term effects could be observed. Thirdly sample size was smaller.

References

1. WHO *Information Series on School Health*- document five: WHO-UNESCO Geneva, 1999 Tobacco Use Prevention: An Important Entry Point for the Development of Health-Promoting Schools; WHO 1999
2. WHO (1998). Press Release WHO/42. Growing Up Without Tobacco. World No-Tobacco Day 1998.
3. WHO (1998). Fact Sheet No.154 – Revised. Tobacco Epidemic: Health Dimensions. Geneva.
4. WHO (1996). Fact Sheet 118. The Tobacco Epidemic: A Global Public Health Emergency. Geneva.
5. WHO (1998). Fact Sheet 197. Tobacco Use by Children: A Paediatric Disease. Geneva
6. Centers for Disease Control and Prevention. Guidelines for School Health Programs. *Preventing Tobacco Use and Addiction - At a Glance.* June 1997.
7. Lynch B.S., Bonnie R.J. Growing Up Tobacco Free. Preventing Nicotine Addiction in Children and Youths., Committee on Preventing Nicotine Addiction in Children and Youths, Division of Behavioural Sciences and Mental Disorders, Insitiute of Medicine. National Academy Press, Washington D.C., 1994.
8. Tsai W C, Kung PT, Hu HY, Ho CS, Lin DJ, Hsieh CL *et al*. Effects of a Tobacco Prevention Education Program on Adolescents' Knowledge of and Attitudes Toward Smoking. *Mid-Taiwan Journal of Medicine* .Dec 2005;10(4):171-180.
9. Lu DLT, Yen LL. The follow-up study of health behaviors of junior high school students in Taipei. *Health Education Journal* 1994; 15:47-56.
10. Kao YC, Yen HW. Evaluation of the outcome in the smoking prevention program. *Chinese Journal of Public Health* 1997;16(2):160-169.
11. Lee FH. The effects of the health education intervention on smoking knowledge, attitude, the ability of self-decision making, and non-smoking intention of the second-grade junior high school students. Unpublished master thesis, Kaohsiung Medical University, Kaohsiung, Taiwan, R.O.C., 1999.

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