FACTORS CONTRIBUTING TO RECEPTIVITY TO NEW CLEAN AIR LAW AMONG TRANSYLVANIAN TEENAGERS

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Abstract: In March 2016, a new Clean Air Law was implemented in Romania, which bans smoking in common areas and enclosed public spaces. The aim of study was to assess the perceptions of the new tobacco control law among adolescents in Romania and to understand the role of sociodemographic, behavioral, environmental and personal factors on influencing adolescent perceptions. We conducted a self-administered, cross-sectional survey of 695 7th grade students from 21 localities, 21 schools, and 55 classes. Logistic regression was used to assess the correlates of acceptance of the clean air law. Most of the responders (94.8%) had heard about the new law, and 76.0% of the students agreed with the bans on smoking in closed places. According to the regression analysis the law was eight times more accepted by the non-smokers. It is also important how informed they are concerning the law – more they know, more they accept it.

Keywords: smoking bans, knowledge, attitude

Introduction

Tobacco use is a major preventable cause of premature death and disease, causing over five million deaths each year worldwide. Nearly all tobacco use begins in childhood and adolescence (Shaik and Doshi 2016; U.S. Department of Health and Human Services 2012). More than 4 million Romanians (27% of the population) were current smokers in 2014, and 42,000 Romanians die annually from tobacco-related causes (European Commission 2015). Survey data reveal that 43.1% of the smokers started daily smoking before reaching the age of 19; 43.1% started between the ages 17–19 years; and 21.7% started between 15–16 years (World Health Organization 2012).

The attitudes towards smoking are influenced by multiple factors, including the family, peer influence, societal norms and tobacco control policies that create an either permissive or restrictive culture towards tobacco. While the policy may have a direct impact on adolescent attitudes towards smoking, such attitudes among young adolescents are likely mediated through environmental (e.g. parental attitudes and/or behavior), behavioral, and personal (e.g. knowledge) factors (Tyas and Pederson 1998).

In March 2016, the Romanian government modified the 349/2002 law regarding tobacco control and from the beginning of April, a new National Clean Air law (15/2016) was implemented, which bans smoking in common areas and all enclosed public spaces. The aim of this study was to assess the perceptions of the new tobacco control law among adolescents in Romania and to

understand the role of sociodemographic, behavioral, environmental and personal factors on influencing adolescent perceptions.

Methods

We conducted a cross-sectional, self-administered questionnaire-based study among 7th grade students from three Transylvanian counties (Mures, Covasna, Harghita) during June 2016, approximately 2 months after the new law was implemented. The stratified sample involved 695 students from 21 localities, 21 schools, and 55 classes; the stratification was based on the size of the settlements, and three categories – below 5000 inhabitants, 5000–30000 inhabitants, above 30000 inhabitants – were defined. Because of the incomplete filling of questionnaires, only 588 students were involved into the multivariate analyses.

The questionnaire measured sociodemographic characteristics, smoking behavior of students and their parents, students' knowledge about the anti-smoking law, communication of the law in the school and in the family, and the agreement with the content of the law.

Sociodemographic variables included gender, age in years and type of settlement. Students and their parents were classified into two groups according to their actual smoking status, such as smokers and non-smokers. The students' knowledge about the anti-smoking law was measured with twelve questions about the places (school, bus station, closed public places etc.) where smoking is allowed or not allowed according to the new law; the number of correct answers was summarized and expressed as „knowledge-index" ranged from 0 to 12 (0=the lowest knowledge, 12=the best knowledge). The communication of the law was measured by two simple questions, such as „Have you heard about the antismoking law in your school / in your family?" The agreement with the bans on smoking in various places was measured by a 4-point-scale (1=completely yes; 4=completely no), the answers were dichotomized as „yes" or „no" for the purpose of binary logistic regression analyses (1=yes; 2,3,4=no).

We used descriptive and analytical methods to describe the basic characteristics of the sample and answer our research questions. Simple frequency distributions, chi-square tests and one-way ANOVA were applied to characterize the sample. The calculation of percentages based on the number of actual respondents. The associations of background variables on the acceptance of the anti-smoking law were examined using uni- and multivariable binary logistic regression analyses. The dependent variable within the regression models was the acceptance of smoking bans, with non-acceptance as the reference category. Independent variables introduced in the model were gender, type of settlement, smoking status of students and their parents, the communication about the law in the school and the family as categorical variables, and knowledge-index as a continuous variable. We calculated the odds ratios (OR or aOR) and 95% confidence intervals (95% CI) for each variable; and $p<0.05$ was considered to be statistically significant. IBM SPSS version 24 was used for statistical analysis.

The research was approved by the university's ethical commission and the specialists took an exam in order to get permission from the NIH (National Institutes of Health) to involve investigational persons in the project. Written permission was obtained from school inspectorates, headmasters (school management) and parents for conducting the survey.

Results

The characteristics of the respondents are summarized in Table 1. The mean age of the population was 14.97 (SD: ± 0.49) years.

Table 1. Characteristics of respondents

Variables	N	%
Settlement size (no. of inhabitants)		
below 5,000	258	37.2

between 5,000-30,000	235	33.9
over 30,000	200	28.8
County		
Hargita	216	31.1
Kovászna	119	17.1
Maros	359	51.8
Gender		
male	319	46.0
female	374	54.0
Agreement with new clean air law		
completely yes (1)	520	76.0
rather yes (2)	110	16.1
may be no (3)	29	4.3
completely no (4)	25	3.7
Smoking behavior – students		
non-smokers	616	88.9
smokers	77	11.1
The clean air law was presented in the school		
no	262	38.1
yes	426	61.9
The clean air law was discussed in the family		
no	191	27.7
yes	499	72.3
Smoker behavior – father		
smokers	300	47.0
non-smokers	338	53.0
Smoker behavior – mother		
smokers	228	36.5
non-smokers	397	63.5

Most of the respondents (94.8 %) had heard about the new law and 72.3 % of them answered that they talked about the new law at home, and this was reported more often among girls than boys (χ^2=10.4, p=0.006). Adolescents living in smaller settlements were more likely than adolescents from larger settles to talk about the law at home (χ^2=26.3; p<0.001). County of residence was inconsequential. Just less than half of students (46.2%) reported that the new law was presented by school officials; smaller settlements had more frequent discussions of the laws in schools (χ^2=39.7; p<0.001).

The mean knowledge-score was 8.75±1.69 points (minimum: 0, maximum: 12). There was no difference between the boys and girls (p=0.348) and between smokers and non-smokers (p=0.832) on the basis of the knowledge-score averages. There was a difference, however, according to settlement size: adolescents living in smaller settlements had more adequate knowledge than young people in large settlements. In settlements with less than 5,000 inhabitants, the average was 8.89 points, in settlements between 5 and 30 thousand inhabitants was 8.91, while settlements with a population of more than 30 thousand reached only 8.37 points (F=7.187, p=0.001).

Altogether 76.0% of the students agreed with the bans on smoking in closed places. The factors influencing the agreement with bans were analyzed by binary logistic regression models (Table 2).

Table 2. Factors associated with the positive attitude toward the Romanian national clean air law (results of binary logistic regressions)

Variables	Univariable		Multivariable	
	OR	p-value	aOR	p-value
Gender				
Female	1.39 (0.98-1.98)	0.064	1.20 (0.79-1.82)	0.386
Male	ref.		ref.	
Settlement size (no. of inhabitants)				
Below 5.000	1.76 (1.14-2.71)	0.010	1.34 (0.79-2.27)	0.276
Between 5.000-30.000	1.36 (0.88-2.08)	0.166	1.07 (0.64-1.80)	0.791
Over 30.000	ref.		ref.	
Smoking behavior – students				
non-smokers	7.99 (4.78-13.36)	<0.001	8.02 (4.55-14.15)	<0.001
smokers	ref.		ref.	
Knowledge of clean air law (continuous variable)	1.14 (1.03-1.26)	0.013	1.16 (1.04-1.31)	0.010
The clean air law was presented in the school				
no	1.04 (0.73-1.50)	0.821	0.98 (0.64-1.50)	0.921
yes	ref.		ref.	
The clean air law was presented in the family				
no	1.11 (0.75-1.65)	0.612	1.09 (0.68-1.74)	0.718
yes	ref.		ref.	
Smoking behavior – father				
smokers	0.73 (0.50-1.06)	0.095	0.76 (0.46-1.26)	0.289
non-smokers	ref.		ref.	
Smoking behavior – mother				
smokers	0.67 (0.46-0.98)	0.038	1.06 (0.62-1.79)	0.838
non-smokers	ref.		ref.	

OR: odds ratio, AOR: adjusted odds ratio

The univariable logistic regression analyses showed significantly higher odds of agreement in smaller settlements, among non-smokers, and among those having better knowledge about the content of anti-smoking law, while the level of agreement was lower among those whose mother was smoking. In the multivariable model the type of the settlement and the role of mothers' smoking were no more significant, while the results in connection with the other variables were similar. The smoking behavior of students was the main predictor of the agreement with the law: the odds of agreement was nearly eight times higher (aOR: 7.99) among non-smokers than smokers ($p<0.001$). The knowledge of the law also significantly increased the probability of acceptance (aOR=1.16, $p=0.01$). Neither in the univariable nor in the multivariable analysis, the fact that they talked about the new law in the family or school did not affect the attitude towards the law.

Discussion

Our research shows most adolescents in our sample are aware of the new Romanian National Clean Air Law, and most of them thought that the measures are appropriate. There was no significant relationship between the fact that the teenagers were talking about the law on their attitude toward the law, although the existing knowledge about the content of the law significantly influenced the agreement with the smoking bans. The most significant factor effecting the reaction towards the law was the teenagers' personal smoking habits. The more actively they smoke, is the less they support

the law.

Our research findings demonstrate that it is not enough to talk about restrictive legislative measures. There is a need for accurate knowledge transfer. It would be important to respect each adolescent's fundamental right to have access to information about their health (Albert-Lőrincz 2013). In order to transform the knowledge into a pro-policy attitude, it is necessary to establish conviction towards the policy. They need to be helped to recognize that smoking is a lifestyle and they have control whether or not they choose to be a smoker (Poland et al. 2006). Prevention of smoking requires reinforcement of smoking control, including knowledge of policy that shapes one's behavior. These data consistent with other research findings such as Unger and colleagues' findings (Unger et al. 1999).

Most research points out that parent's smoking is one of the most influent factors in adolescent's smoking, but there is no consensus that father's or mother's behavior has greater impact (Tyas and Pederson 1998; Hover and Gaffney 1988; Scragg and Laugesen 2007). In Romanian culture, there is some evidence that the maternal model is more influential on children's behavior (Szabo et al. 2017). Although neither parent's smoking behavior was not correlated with attitudes towards the clean air law in the multivariable model, other studies have found parental behavior important in shaping adolescent attitudes and behaviors.

A series of studies demonstrate that adolescent smoking habits are positively influenced by local communities and their collective attitude on adolescence smoking (Henderson and Thomas 2005; Dupuy 2003). Consistent with these studies, we found that children in smaller communities had a more positive perspective on the clean air law. One explanation is that the smaller communities may have more tightly networked individuals creating more cohesive and collective perspectives on the clean air law. The most robust finding of the research is the correlation between smoking status and attitudes towards the clean air law. Thus, if the protection of adolescents' health and the protection of minors from secondhand smoke exposure is important, then smoking adolescents should be targeted to support the prevention of transitions from social smoking to nicotine addiction and support cessation. Changing the attitudes towards smoking and reduction of secondhand smoke requires a long process, as outlined by the European Commission (The ASPECT Commission 2004). We encourage the use of a system approach, where the intrapersonal, familial and school environments are considered as intervention targets. This must be supplemented by the political-social environments that would limit smoking.

This is the first published study to document the relationship between intrapersonal, familial, and community factors that contribute to adolescent attitudes of the new Romanian national clean air law. Our findings demonstrate the importance of accurate knowledge transfer related to the future smoking prevention and cessation programs targeting youth population. However, there are methodological limitations, and results should be interpreted with caution. First, we are unable to infer causality due to the cross-sectional nature of our study. It would be valuable to conduct a longitudinal study to understand the change in adolescent attitudes before and after the law. Additionally, the generalizability is limited because our focus is only on Romania and therefore cannot be generalized to other countries. However, given the diversity of communities represented in our sample, we believe the results are generalizable to other regions of Romania.

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