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No-Smoking Policy in Russia: Awareness and Perceptions Among Bashkortostan Adolescents

Artur Galimov [1] · Jane Steinberg [1] · Jennifer B. Unger [1] · Tess Boley Cruz [1] · Bulat Idrisov [2,3] · Lourdes Baezconde-Garbanati [1] · Radik Masagutov [4] · Steve Sussman [1]

Abstract

Purpose of Review This study aims to describe adolescents' knowledge and endorsement of tobacco policies in the Russian Federation. We first describe the history of tobacco control policies, and then examine Bashkortostan adolescents' perceptions of current policies, as well as non-compliance.

Recent Findings The Russian Federation has enacted several smoke-free policies that may reduce exposure to second-hand smoke. Among 716 high school students surveyed, over 90% correctly understood the smoke-free rules in public places, school, apartment hallways and elevators, and public transportation. However, only 24% understood that there were no such rules currently applied inside apartments. Approximately 40% witnessed non-compliance in public places and school and 61% in apartment stairs and elevators. The highest compliance was observed in public transportation (85%). Two thirds of 57 recent smokers had violated one of these policies. Adolescents disciplined or suspended from school were more likely to be non-compliant with no smoking policies.

Summary Better and widespread education on tobacco laws, enforcement, and potentially more severe penalties for violations should be implemented in the Russian Federation to increase compliance.

Keywords No-smoking policy · Adolescents · Russian Federation · Smoking cessation · Tobacco control · Compliance

Introduction

According to the Russian Health Ministry, 300,000 to 400,000 Russian citizens die each year from smoking-related illnesses [1, 2]. The current comprehensive smoke-free policies in the Russian Federation have been in place since 2008, when the prevalence of smoking among adults (39.4% according to the Global Adult Tobacco Survey 2008) was above the world's average [3–6]. Prior to 2008, due to tobacco industry influence, Russia had among the lowest cigarette taxes in the world, contributing to this high rate of smoking [7, 8]. An understanding of tobacco policy in Russia necessitates an examination of its tobacco policy history.

History of Tobacco Control and No-Smoking Policies in Russia

Russia's tobacco policies date back to the sixteenth century. While previous Czars opposed tobacco use, Peter the Great established large-scale commerce with Britain to meet the Russian citizens' growing demand for tobacco [9•]. By the mid-eighteenth century, chewing and snuffing tobacco in public was socially acceptable; however, under Tsar Nicholas I, who was a non-smoker, smoking was banned in the streets, squares, and public places. Several decades later, Alexander II overturned his father's bans and the sale of tobacco, cigarettes, and cigars was allowed again [10••]. During the early 1900s,

many factories were built in Russia, which produced 80% of all the country's cigarettes. During World War II, many tobacco factories were evacuated to the Volga region, the Urals and Siberia, which caused reduced supply with an increased demand for cigarettes [11]. By the 1960s to meet increased demand, Russia began its own large-scale domestic production of tobacco and the 1970s saw the first formal establishment of trade agreements between US tobacco companies and Russia. During this period, the first warning labels appeared on cigarettes (which covered 4% of the pack).

The first large-scale Russian measures to restrict smoking were adopted in 1980. This law banned the sale of cigarettes to children under 16, restricted smoking in workplaces to certain rooms, banned smoking at schools, and expanded the use of warning labels on packages [10••]. A shortage of domestic production throughout the 1980s, caused by economic stagnation, led to a thriving black market where American brands were sold at very high prices in areas frequented by foreigners or at railway stations. By the 1990s, transnational tobacco companies purchased Russian tobacco factories and the shortage was eliminated. Since then, all the world's leading cigarette brands could be purchased in Russia, but most of them are produced in Russia under license [10••, 11].

Following the collapse of the Soviet Union in 1991, an economic transition occurred which lead to privatization of state-controlled tobacco monopolies, foreign investment, and increases in advertising directed at women, youth, and urban populations [8, 12]. Strong lobbying by the Russian tobacco industry weakened existing tobacco legislation, such as lifting of advertisement bans and maintaining minimal health and graphic warnings on packages [8]. Rates of cigarette smoking increased exponentially among the public, putting Russia far ahead of other countries in Eastern Europe in per-capita cigarette consumption and smoking-related mortality [3]. By the 1990s, the pervasive influence of transnational tobacco companies significantly delayed implementation of tobacco control policy measures taken by the Russian government. Philip Morris and British American Tobacco also funded Russian research institutes to study tobacco regulation and tax policy. In 2008, Russia had among the lowest cigarette taxes in the world, contributing to its high rates of smoking [7].

Internationally, there were coordinated efforts to create a global tobacco policy. In May of 2003, the Member States of the World Health Organization adopted the Framework Convention on Tobacco Control (FCTC) (see http://www.who.int/fctc/about/en/; accessed 1 October 2017), an international treaty that commits countries to implement a range of established evidence-based tobacco control interventions to counteract the pro-tobacco influences of transnational tobacco companies. The FCTC entered into force on 27 February 2005 after years of negotiations that resulted in intense international diffusion of knowledge about the risks of tobacco use and effective policies and approaches to its

control world-wide [13•]. A total of 181 countries have become parties (legally bound) in the treaty (as of October, 2017).

In Russia, an influential trade group, the Council for the Development of the Tobacco Industry—backed by Philip Morris—set weak tobacco policies that pre-empted the more stringent safeguards mandated by the FCTC [7]. As such, Russia was one of the most recent countries to sign the WHO FCTC, delaying its signing until 2008 [3]. While some policies were in place in earlier decades, the current tobacco restrictions in Russia are largely based on the FCTC. Within the Russian Federation, implementation and enforcement and compliance of these policies has varied across regions [4, 14].

Current Tobacco Policies in Russia

In 2012, President Vladimir Putin supported tobacco control measures to reduce the country's smoking-related mortality rate and to fulfill its FCTC mandate to implement its control strategies by 2015 [7]. In 2013, Putin launched an anti-tobacco campaign, starting with a major ban on cigarette advertising in print media and online, with graphic warnings of the consequences of smoking displayed on packs of cigarettes, and increased taxes on tobacco products [15].

On 20 February 2013, the Federation Council of the Russian Federation approved Federal Law No. 15-FZ "On protection the health of citizens from the effects of second hand tobacco smoke and the consequences of tobacco consumption." Beginning 1 June 2013, the new law banned smoking in offices, work zones, on school grounds, facilities for cultural institutions and youth organizations, sports and physical education fields, hotels, public buildings, medical institutions, elevators, common areas of apartment buildings, children's play areas, public transport, beaches, gas stations, and inside or anywhere within 50 ft (15 m) of an entrance to subways, bus stations, airports, seaports and train stations. Smoking still is allowed inside of flats [16•, 17].

As of June 2013, retail sale of tobacco products is prohibited on school property and within a 330-ft (100 m) radius distance around them, near cultural institutes, youth organizations, athletics and sports venues, medical and rehabilitation institutions, and on all types of urban and commuter transport. Retailers can sell cigarettes only to individuals who are at least 18 years old, and they must check the ID of anyone who looks younger than 18 years of age. The use of tobacco by minors is not permitted. Additionally, as of 1 June 2014, retail sale is banned at and near subways, bus stations, hotels, airports (with the exception of duty-free stores), seaports, and train stations [16•]. The penalty for violation of the law is a fine of up to 1500 rubles ($47) for individual smokers and up to 90,000 rubles ($2800) for legal entities [17].

The Present Study

This history sets the context for the current study. According to the Russian Health Ministry, the government's tobacco control efforts have had an impact; the number of children aged 13 to 15 who smoke declined to 9.3% in 2015 from 25.4% in 2004; however, the source of the data was not cited [15]. To the best of our knowledge, no studies have yet evaluated endorsement of these tobacco policies in the Russian Federation. In 2015, we surveyed a large convenience sample of Russian adolescents and assessed their knowledge, attitudes, beliefs, and compliance behavior regarding the 2013 no-smoking policy. This policy had been implemented approximately 1 year prior to the survey. We explored adolescents' perceptions about the extent of policy enforcement and whether compliance varied by gender, ethnicity, family structure, socioeconomic status (SES), drug use, or other problem behaviors (i.e., antisocial behaviors). We speculated that compliance would not be high overall, and that it would be particularly low among males, those of low SES, and youth who used other drugs (i.e., at risk youth). We also hypothesized that attitudes and perceived policy effectiveness would be more positive among non-smokers.

Methods

Study Population

The survey was conducted in three areas of Bashkortostan, Russia. Bashkortostan is a republic within the Russian Federation that has a population of 4.1 million, represents numerous ethnicities, and spans over 143,600 km^2. Ufa is the capital of Bashkortostan and has a population of over 1 million. Sterlitamak is the second largest city of Bashkortostan with a population of 274,000. Finally, Karagaevo is a village in Bashkortostan, which is 143 km from Ufa and has a population of 330 [18, 19].

An anonymous survey of Russian high school students was conducted in 2015. We assessed demographics, tobacco and other drug use, and no-smoking policy knowledge, attitudes, beliefs, and compliance. A total of 778 students were invited to participate in our study. Data was collected from 716 participants (response rate 92.1%) sampled from nine selected high schools located in these three locations in the Bashkortostan Republic, Russian Federation (Ufa, Sterlitamak, and Karagaevo).

The schools were selected as a convenience sample by city officials (Education Department officials) and researchers to represent a cross-section of their cities: six schools in Sterlitamak, two schools in Ufa, and one school in Karagaevo. The classes that participated in the survey were randomly selected from each school. The questionnaire was developed in English, translated into Russian and back-translated into English by two bilingual speakers. A similar method has been used in prior studies conducted in the Russian Federation (e.g., [20]). The Bashkir State Medical University Institutional Review Board approved all study procedures. Participation in the study was voluntary, and all subjects had the option of withdrawing from the study at any time without a penalty. Participants' verbal agreement and parents' informed consent was obtained for subjects under age 18, while participants who were 18 years or older provided informed consent prior to participating in the study.

Measures

Demographics

We assessed age, gender, ethnicity, living situation, and SES. We had seven categories of ethnic groups in our sample: Russian, Tatar, Bashkir, Tatar/Bashkir, Russian/Tatar; Russian/ Bashkir, and Other. In order to better represent the ethnicity categories in terms of similar cultural and religious backgrounds, we collapsed these categories into three groups: Russian, Tatar or Bashkir, and other. We asked students a question "who do you live with?" to examine the family structure. Response options included "both parents (or step parents)," "only with my mother (or stepmother)," "only with father (or stepfather)," "sometimes with my mother (or stepmother) and sometimes with my father (or stepfather)," and "other." Since majority of the participants indicted that they live with both parents (75.8%) and with my mother/ stepmother (22.2%) response options for this question were collapsed into two categories: "both parents (or step parents)" and "other." We evaluated participants' SES by asking about their parents' level of education separately for mothers and fathers (i.e., "What is the highest degree completed by your mother/father?"). The response categories included: "secondary school," "vocational training," "university degree," and "other." Since none of the participants selected "other" category for father's education and only three participants (0.4%) selected this category for mother's education, we decided to exclude this response option from the analysis. Those who chose "other" for mother's education were treated as missing for this question. These two measures of parental education were treated separately.

Drug Use Behavior and Disciplinary Events

To examine ever use of tobacco products and other drugs (i.e., cigarettes, e-cigarettes, hookah, alcohol, marijuana, and other drugs), we asked the following matrix-type item: "In your lifetime, how many times have you tried each of the substances below?" The 11 response categories ranged from 0 to over 100 times. We coded a response other than "0 times"

as ever use of each corresponding product. A similar method was used in previous studies among Russian adolescents [21]. Due to the low prevalence of "krokodil" (desomorphine), cocaine, hallucinogens, stimulants, inhalants, ecstasy, codeine, and tranquilizers use in our sample, we collapsed these items into one "other drugs" category. Ever use of any these drugs was coded as ever use of "Other Drugs", whereas last 30-day use - as past 30-day use of other Drugs. We assessed last 30-day use of hookah (current use), e-cigarettes, cigarettes, alcohol, marijuana, and other drugs by asking a question: "How many times have you used each of these substances in the last month (last 30 days)?" The response categories also ranged from 0 to over 100 times and any answers other than "0 times" were coded as past 30-day use of each corresponding product.

To assess participants' disciplinary events, we asked a question: "During the past 2 years, did you get disciplined or suspended from school." Response categories for this question were "yes" or "no." This scale was derived from an abbreviated (18-item) version of the Adolescent Negative Life Events Inventory [22, 23] and was used in previous studies among adolescents [24, 25].

No-Smoking Policy Items

We assessed awareness about the Federal Law by asking: "Is smoking cigarettes permitted at certain locations?" (i.e., at public places: theaters, restaurants, or sports stadiums; at school; on the stairways or elevators of residential flats; inside of flats; inside public transportation—five questions). Response categories for these questions for each location were yes or no.

We examined compliance with no-smoking policy among past 30-day smokers by asking if they have smoked (cigarettes, cigars, pipes, and other tobacco leaf-based products) in these locations since 1 September 2013 when the smoking ban was passed. Responses to these questions for each location were yes or no. We created an "overall compliance" variable. Response answers were coded as "1" (non-compliant) if the subject smoked at least in one above-mentioned location and "0" if the subject did not violate the policy. We also examined witnessed noncompliance with tobacco smoking policy by asking all students if they observed someone smoked (cigarettes, cigars, pipes, and other tobacco leaf-based products) in the locations listed above since 1 September 2013. Response answers for these questions for each location were coded as yes or no.

In order to minimize information bias and better assess the awareness about the no-smoking policy, other no-smoking policy measures (attitudes and perceptions) were worded to reflect hypothetical enforcement. In other words, asking students whether they agreed with a policy would suggest to them that there *was* a policy, and they might change their answers about policy awareness; therefore, we asked whether they would approve a hypothetical policy. We assessed subjects' attitude towards the no-smoking policy by asking: "To what extent would you approve a policy mandating that cigarette smoking was not permitted" in the locations listed above. Response categories ranged from 1 to 4 ("Extremely approve," "Moderately approve," "Approve a little," and "Not at all approve," respectively). We assessed reliability of this scale, which was high (Cronbach's alpha = 0.87). We created an "overall attitude" variable by taking a mean of these items.

We assessed respondents' perceptions of the no-smoking Federal Law effectiveness by asking: "To what extent do you believe that a policy mandating that cigarette smoking was not permitted in certain locations (i.e. theatres, restaurants, or sports stadiums; at school; on the stairways or elevators of residential flats; inside of flats; inside public transportation) would lower the prevalence of smoking?". The response answers ranged from 1 to 4 ("Not at all believe," "Believe a little," "Moderately believe," and "Extremely believe," respectively). We created "an overall perceived policy effectiveness" variable by taking a mean of these items. Reliability of this scale was high (Cronbach's alpha = 0.88). "Smoking inside of flats" was treated separately because smoking within multiunit housing is still permitted in Russia.

Data Analysis

Univariate distributions of all variables and descriptive statistics were examined before conducting bivariate and multivariate analyses. We used Pearson's Chi-square test to examine the associations between categorical study variables. Differences between groups defined by past 30-day smoking (of cigarettes, cigars, pipes, and other tobacco leaf-based products) were evaluated using t-tests for attitude and beliefs towards no-smoking policy variables. For the final model, based on the intraclass correlation > 0.01 and the average cluster size [26], we fitted six separate multilevel models to evaluate associations between overall attitude, overall perceived policy effectiveness, awareness about the Federal Law in public places, at school, on the stairways, or elevators, inside residential flats as dependent variables and gender, mother's highest degree, father's highest degree, family structure, ethnicity, ever e-cigarette use, marijuana and other drug use, past 30-day cigarette, hookah and alcohol use, and disciplinary events items as independent variables, accounting for nesting of subjects within schools as cluster. We performed two separate multinomial logistic regression models to assess associations between overall compliance and awareness about the Federal Law in public transportation as the dependent variables with listed above set of independent variables based on the intraclass correlation < 0.01. All statistical analyses were conducted using SAS software (version 9.4; SAS Institute, Cary, NC).

Results

Participant Characteristics The mean age of the sample was 16.27, with a nearly even gender split (48.46% male; 51.5% female). Total sample size, demographic characteristics, and answers for no-smoking policy items are shown in Table 1. Students showed high levels of awareness of the various no-smoking law locations (91.34–99.44%), except the "inside of flats" item, in which only 23.88% students answered correctly. That is, there was a tendency for participants to report that a no-smoking policy operated inside apartments when in fact, smoking inside of flats is allowed. Past 30-day smokers were more knowledgeable that smoking is permitted inside of flats (OR = 2.46 (95% CI, 1.21, 5.01), $p = 0.013$) compared with non-smokers. However, smokers were less knowledgeable about the policy banning smoking on the stairways or elevators of residential flats, inside public transportation and at public places (OR = 0.51 (95% CI, 0.22, 1.15), $p = 0.10$; OR = 0.21 (95% CI, 0.02, 0,95), $p = 0.045$; OR = 0.14 (95% CI, 0.02, 0.94), $p = 0.042$, respectively). Both groups showed similar results regarding knowledge of the policy restricting smoking on school property.

Drug Use Behavior Ever smoking was reported by 38.7%, and 8.0% smoked in the past 30 days. Ever e-cigarette use was reported by 28.6%, and 2.2% used e-cigarettes within the past 30 days. Hookah use was more prevalent, with 34.9% reporting ever using hookah; 9.4% reported past 30-day use; 40.9% participants reported ever trying alcohol in their lifetime and 12.4% reported past 30-day alcohol use. Ever marijuana use was reported by 4.6%, and 0.3% reported past 30-day marijuana use. Ever use of other drugs was reported by 4.8%, with 0.7% experimenting with other drugs in the past 30 days. (Table 1).

Non-compliant Smoking Behavior There was relatively high non-compliance (63.2%) by past 30-day smokers with the no-smoking policy on the stairway or elevators of residential flats. Non-compliance among smokers was lower at school (29.8%), public places (17.5%), and public transportation (15.8%). The multilevel analysis revealed that after adjusting for other variables, past 30-day smokers who violated the no-smoking policies were statistically more likely to report being disciplined or suspended from school (OR = 8.83, $p = 0.05$).

Smoking Violations Observed A total of 440 respondents (61.5%) reported that they witnessed non-compliance with the smoke-free policy on the stairways or elevators of residential flats. Similar rates of non-compliance were observed at school and public places (39.1 and 41.6%, respectively). The lowest rate of violations with the no-smoking policy was witnessed by subjects inside public transportation (15.1%).

Table 1 Participant characteristics for the total sample size

Study variables	Total sample ($n = 716$)
Gender (male)	347 (48.46%)
Age (M, SD)	16.27 ± 1.02
Ethnicity (%)	
Russian	208 (29.05%)
Bashkir/Tatar	362 (50.56%)
Other	146 (20.39%)
Family structure	
Both parents	544 (75.84%)
Other	172 (24.16%)
Mother's highest degree	
Secondary school	38 (5.34%)
Vocational training	395 (55.48%)
University degree	279 (39.19%)
Father's highest degree	
Secondary school	58 (8.18%)
Vocational training	361 (50.92%)
University degree	290 (40.90%)
Smoking policy	
Knowledge of non-smoking policy about	
Public places	709 (99.02%)
School	712 (99.44%)
Stairways and elevators	654 (91.34%)
Inside flats	171 (23.88%)
Public transportation	705 (98.46%)
Witnessed non-compliance	
Public places	298 (41.62%)
School	280 (39.11%)
Stairways and elevators	440 (61.45%)
Public transportation	108 (15.08%)
Smoking behaviors	
Last 30-day smokers	57 (7.96%)
Ever smokers	277 (38.69%)
Last 30 day e-cigarette smokers	16 (2.23%)
Ever e-cigarette smokers	205 (28.63%)
Last 30-day hookah smokers	67 (9.36%)
Ever hookah smokers	250 (34.92%)
Alcohol use	
Last 30-day alcohol users	89 (12.43%)
Ever alcohol users	293 (40.92%)
Drug use	
Last 30-day marijuana users	2 (0.28%)
Ever marijuana users	33 (4.61%)
Last 30-day other drug users	5 (0.70%)
Ever other drug users	34 (4.75%)

Attitudes and Perceived Policy Effectiveness Participants' attitudes towards the policies and perceived effectiveness differed between non-smokers and past 30-day smokers, with

higher rates of approval (mean scores, 3.77 vs. 3.07) and more positive beliefs (mean scores, 2.91 vs.2.32) among non-smokers (Fig. 1). The multilevel analysis revealed that the mean approval rating was lower among past 30-day cigarette and hookah smokers compared with non-smokers ($\beta = -0.47$, $p < 0.001$ and $\beta = -0.17$, $p = 0.042$, respectively), among ever e-cigarette users compared with non-users ($\beta = -0.09$, $p = 0.054$), and those who reported being disciplined or suspended from school ($\beta = -0.25$, $p = 0.002$) (Table 2). The model assessing the perceived policy effectiveness showed males held marginally more positive beliefs ($\beta = 0.1$, $p = 0.1$) than females, meanwhile past 30-day smokers held marginally less positive beliefs towards policy effectiveness compared with non-smokers ($\beta = -0.21$, $p = 0.1$). Those participants who belonged to Bashkir or Tatar ethnicity had more positive beliefs towards policy compared with those of Russian ethnicity ($\beta = 0.18$, $p = 0.015$) (Table 2).

Discussion

We provided a history of tobacco control policies in the Russian Federation and the first empirical data on adolescent compliance with the non-smoking policies in 2015 1 year after enactment. Our study found that overall compliance with the no-smoking policy was low among adolescent smokers: 64.9% of past 30-day smokers had smoked in at least one location where smoking was not permitted. However, these compliance rates varied by location of the policies, with the highest non-compliance prevalence observed on stairways and elevators of residential flats, followed by schools. Far

fewer violations were reported in public places and public transportation. Adolescents disciplined or suspended from school were more likely to be non-compliant with no-smoking policies.

One may speculate that low compliance with tobacco policy may be ascribed to poor enforcement. Additionally, low compliance on stairways and elevators of residential flats may be due to a slightly lower prevalence of knowledge about the policy in these locations (91.3%) compared with other public places (99.0%), schools (99.4%), and public transport (98.5%). There may also be fewer signs that warn against violations in these and other places. For example, anecdotally, researchers observed better compliance with the policy when citation of the Federal Law was placed in a visible area on the stairways of residential flats.

We found that participants' attitudes towards new policy were more favorable among nonsmokers, among those of Bashkir and Tatar ethnicity, and among those who was not disciplined or suspended from school.

Implications for No-Smoking Policy Compliance and Research

Several new tobacco control policies are being considered in the Russian Federation. The Health Ministry has proposed a complete ban on selling cigarettes to people born after 2014, even after they are 18, which is currently the legal smoking age in the country. Other proposals include banning smoking in cars in the presence of children; extending working hours for smokers to make up time for cigarette breaks; banning hookah and e-cigarette smoking in cafes and restaurants; and
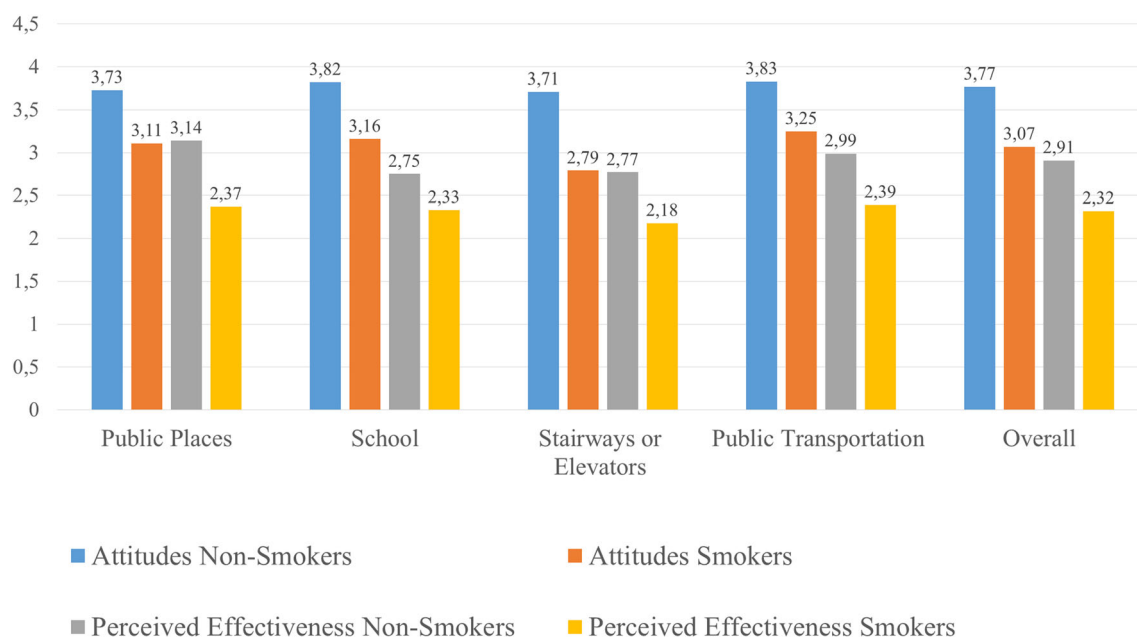

Fig. 1 Participant attitudes and perceived policy effectiveness stratified by past-30-day smoking status

Table 2 Multilevel models examining the association between study variables and overall attitudes and perceived policy effectiveness with school as a cluster

Independent variables	Attitudes		Perceived effectiveness	
	β	95% CI	β	95% CI
Gender (female = ref)	− 0.03	(− 0.11, 0.05)	0.10[‡]	(− 0.02, 022)
Age	0.03	(− 0.01, 0.08)	− 0.01	(− 0.07, 0.06)
Ethnicity				
Russian (ref)				
Bashkir/Tatar	0.10*	(0.01, 0.21)	0.18*	(0.03, 0.32)
Other	0.03	(− 0.08, 0.15)	0.04	(− 0.13, 0.20)
Family structure				
Other person(s) (ref)				
Both parents	0.05	(− 0.05, 0.015)	0.01	(− 0.13, 0.15)
Mother's highest degree				
Secondary school (ref)				
Vocational training	0.13	(− 0.06, 0.32)	− 0.02	(− 0.30, 0.25)
University degree	0.16	(− 0.04, 0.36)	0.07	(− 0.22, 0.35)
Father's highest degree				
Secondary school (ref)				
Vocational training	0.01	(− 0.15, 0.17)	− 0.09	(− 0.32, 0.14)
University degree	0.03	(− 0.14, 0.19)	− 0.04	(− 0.28, 0.21)
Past 30-day use (never use = ref)				
Cigarettes	− 0.47**	(− 0.65, − 0.29)	− 0.21[‡]	(− 0.47, 0.05)
Alcohol	0.02	(− 0.13, 0.17)	− 0.12	(− 0.34, 0.09)
Hookah	− 0.17*	(− 0.33, − 0.01)	− 0.02	(− 0.25, 0.21)
Ever use (never use = ref)				
E-cigarettes	− 0.09[‡]	(− 0.19, 0.01)	0.08	(− 0.06, 0.22)
Marijuana	0.01	(− 0.21, 0.22)	− 0.02	(− 0.32, 0.28)
Other drugs	− 0.09	(− 0.28, 0.11)	− 0.16	(− 0.44, 0.12)
Antisocial behaviors (no = ref)				
School/work trouble	− 0.25**	(− 0.20, 0.18)	0.03	(− 0.21, 0.26)
Trouble with the law	− 0.01	(− 0.42, − 0.09)	− 0.02	(− 0.29, 0.25)

[‡] $p < 0.1$; * $p < 0.05$; ** $p < 0.01$. p values are derived from testing linear regression coefficients

placing health warnings on individual cigarettes [2]. Education about these policies and adequate enforcement could have an important effect on adolescent smoking.

Current laws discourage smoking, restrict advertising and promotions of tobacco, and prevent second hand smoke (exposure for bystanders). In addition, as of 1 June 2013 packs of cigarettes must display graphic warnings of the consequences of smoking [16•, 27]. The penalty for violation of the law is a fine of up to 3000 rubles ($52) for individual smokers, up to 90,000 rubles ($1550) for selling tobacco to youth under 18 years old, and up to 500,000 rubles ($8620) for tobacco sponsorship and advertising [16•, 28]. However, enforcement of these polices is limited [17].

Previous studies have documented that smoke-free policies can exert a 6% incremental impact on lowering the tobacco use prevalence among a large population of adolescents. It is a relatively effective tobacco use prevention strategy [29]. Russia's current tobacco control laws—specifically advertising and second-hand smoke laws—can be effective at reducing and preventing tobacco use only if they are adequately enforced and both consumers as well as law enforcement and community leaders are informed about them and are willing to comply [30]. Additionally, tobacco control laws can contribute to voluntary smoke-free rules that can further reduce second-hand smoke exposure and help youth not start, as well as help smokers quit [31]. However, the level of awareness of these laws and compliance can vary within the population and within the retail environment that might sell cigarettes to youth.

Russian tobacco control activists remain concerned about ongoing implementation of Russia's tobacco control laws, noting the tobacco industry's influence on Putin's United Russia Party [7] may reduce the potential impact of these laws. Lack of monitoring by authorities and weak enforcement has been cited as one of the reasons why Russia's efforts to limit smoking in public would have minimal effect on the

habits of its citizens [17]. Effective compliance would depend on widespread diffusion of information on the FCTC throughout the Federation, as well as educational efforts directed at retailers, enforcement personnel and smokers to increase compliance. Education and promotion of information is needed at multiple levels (among youth, apartment managers and owners, as well as wider use of antismoking signage). Working closely with an enforcement authority, adequate monitoring is also needed [30].

Our findings suggest that compliance is poorer where knowledge of the laws is poorer. While knowledge alone may not be sufficient to achieve full compliance, it is a necessary first step in reducing adolescent tobacco use. Additionally, more severe penalties for violations can be potentially effective in increasing compliance.

Despite the claims suggesting that the number of smokers has declined in Russia, further research investigating the nature of this decrease is needed. One can speculate that this decline may be due to adolescents experimenting with alternative tobacco products such as e-cigarettes and hookah, where the prevalence of use was relatively high in our sample. Hence, the government should consider new polices banning alternative tobacco products or setting their minimum purchase age to at least 18 years as has been done in US cities.

Study Limitations

Only a single time point was examined in the current study. Longitudinal work would be better able to tap changes in compliance over time as a function of differential enforcement. In addition, only a convenience sample of teens within one Republic of the Russian Federation was assessed. It is not clear how these results would generalize to youth in other regions of the country (e.g., rural areas). Additionally, smoking is illegal for youth under 18 years, as a result they are likely to underreport their smoking behavior.

Conclusion

This study describes the regulatory context in which adolescent smokers are currently learning about and complying with no-smoking policies in the Russian Federation. Survey results add to this profile by identifying gaps in knowledge about these policies and segments of youth at higher risk of violating these policies, as well as dual use of other tobacco and drug products that may help identify segments of the adolescent population that need more education. Better education and enforcement related to no-smoking policies also needs to be directed at apartment residents and managers, school personnel and the adolescents in these schools. Additional policies

that would ban alternative tobacco use of tobacco products or setting the minimum purchase age to at least 18 years, potentially more severe penalties for violations and restricting smoking inside apartment flats (multiunit housing regulation) could lead to smoking cessation and reduction of exposure to second-hand smoke in apartment buildings. If these new polices are implemented, researchers should consider longitudinal study designs to detect changes before and after the laws are enacted, to provide a foundation for future regulatory efforts.

Compliance with Ethical Standards

References

Papers of particular interest, published recently, have been highlighted as:
• Of importance
•• Of major importance

1. Steel N. Global, regional, and national age-sex specific mortality for 264 causes of death, 1980–2016: a systematic analysis for the global burden of disease study 2016. Lancet. 2017;390(10100): 1151–210.
2. Balmforth T. Russian Ministry airs drastic proposals to snuff out smoking. Radio Free Europe/Radio Liberty. January 10, 2017. https://www.rferl.org/a/russia-drastic-proposals-to-snuff-out-smoking-cigarettes/28224105.html. Accessed 19 September 2017.
3. Lunze K, Migliorini L. Tobacco control in the Russian Federation—a policy analysis. BMC Public Health. 2013;13(1): 64. https://doi.org/10.1186/1471-2458-13-64.
4. World Health Organization. WHO report on the global tobacco epidemic, 2011: warning about the dangers of tobacco. Geneva; 2011.
5. Reitsma MB, Fullman N, Ng M, Salama JS, Abajobir A, Abate KH, et al. Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990–2015: a systematic analysis for the global burden of disease study 2015. Lancet. 2016;389(10082): 1885–906. https://doi.org/10.1016/S0140-6736(17)30819-X.
6. World Health Organization. WHO global report on trends in prevalence of tobacco smoking 2015. Geneva: World Health Organization; 2015.
7. Freudenberg N. Lethal but legal: corporations, consumption, and protecting public health. Oxford: Oxford University Press; 2014.
8. Perlman F, Bobak M, Gilmore A, McKee M. Trends in the prevalence of smoking in Russia during the transition to a market economy. Tob Control. 2007;16(5):299–305. https://doi.org/10.1136/tc.2006.019455.

9.• Lillard D, Christopoulou R. Life-course smoking behavior: patterns and National Context in ten countries. Oxford: Oxford University Press; 2015. **Presents smoking data from a life-course perspective and places smoking patterns into historical context**. https://doi.org/10.1093/med/9780199389100.001.0001.

10.•• Manaev G. Nicotine nation: The story of Russia's addiction to the cigarette. Russia Beyond. Russia Beyond. June 07, 2014. https://www.rbth.com/society/2014/06/07/nicotine_nation_the_story_of_russias_addiction_to_the_cigarette_37287.html. Accessed 29 September 2017. **This important source describes the history of tobacco control and no-smoking policies in Russia**.

11. Osipova A. Smoke of the motherland. Russian Life. January 2007. https://russianlife.com/archive/article/params/Number/1690/. Accessed 27 November 2017.

12. Gilmore A, McKee M. Tobacco and transition: an overview of industry investments, impact and influence in the former Soviet Union. Tob Control. 2004;13(2):136–42. https://doi.org/10.1136/tc.2002.002667.

13.• Wipfli H. The global war on tobacco. Baltimore: Johns Hopkins University Press; 2015. **This source describes the origin and development of the FCTC, provide real-world examples of the success or failure of tobacco control**.

14. Roberts B, Stickley A, Gilmore AB, Danishevski K, Kizilova K, Bryden A, et al. Knowledge of the health impacts of smoking and public attitudes towards tobacco control in the former soviet union. Tob Control. 2013;22(6):e12. https://doi.org/10.1136/tobaccocontrol-2011-050249.

15. Jacquettejan R. Russian proposal would phase in cigarette ban, but current smokers get a pass. New York Times. January 12, 2017 https://www.nytimes.com/2017/01/12/world/europe/russia-smoking-cigarettes.html#story-continues-1. Accessed 29 September 2017.

16.• Russian Federation. Federal Law No 15-FZ of 23 February 2013. "On protection the health of citizens from the effects of second hand tobacco smoke and the consequences of tobacco consumption." Adopted by the State Duma on February 12, 2013: Endorsed by the Council of Federation on February 20, 2013. **This is the full text of enforced Federal Law.**

17. Ponomareva Y. Smoking ban widely expected to be ignored in Russia. Russia Beyond. June 5, 2013. https://www.rbth.com/society/2013/06/04/smoking_ban_widely_expected_to_be_ignored_in_russia_26731.html. Accessed 29 September 2017.

18. Minahan J. One Europe, many nations: a historical dictionary of European national groups: Westport, Greenwood Publishing Group; 2000.

19. Saunders RA, Strukov V. Historical dictionary of the Russian Federation. Scarecrow Press; 2010.

20. Sussman S, Gunning M, Lisha NE, Rohrbach LA, Kniazev V, Masagutov R. Concurrent predictors of drug use consequences among U.S. and Russian adolescents. Salud y Drogas. 2009;9(2):129–48.

21. Kong G, Idrisov B, Galimov A, Masagutov R, Sussman S. Electronic cigarette use among adolescents in the Russian Federation. Substance Use & Misuse. 2017;52(3):332–9. https://doi.org/10.1080/10826084.2016.1225766.

22. Wills TA. Stress and coping in early adolescence: relationships to substance use in urban school samples. Health Psychol. 1986;5(6):503–29. https://doi.org/10.1037/0278-6133.5.6.503.

23. Wills TA, Cleary SD. How are social support effects mediated? A test with parental support and adolescent substance use. J Pers Soc Psychol. 1996;71(5):937–52. https://doi.org/10.1037/0022-3514.71.5.937.

24. Rohrbach LA, Grana R, Vernberg E, Sussman S, Sun P. Impact of hurricane Rita on adolescent substance use. Psychiatry: Interpersonal and Biological Processes. 2009;72(3):222–37. https://doi.org/10.1521/psyc.2009.72.3.222.

25. Arpawong TE, Sussman S, Milam JE, Unger JB, Land H, Sun P, et al. Posttraumatic growth, stressful life events, and relationship with substance use behaviors among alternative high school students: a prospective study. Psychol Health. 2015;30(4):475–94. https://doi.org/10.1080/08870446.2014.979171.

26. Murray DM, Moskowitz JM, Dent CW. Design and analysis issues in community-based drug abuse prevention. Am Behav Sci. 1996;39(7):853–67. https://doi.org/10.1177/0002764296039007007.

27. Russian Federation. Federal Law No. 268-FZ of December 22, 2008. "Technical Regulations for Tobacco Products". Adopted by the State Duma on December 3, 2008: Endorsed by the Council of Federation on December 17, 2008.

28. Russian Federation. Federal Law No 195-FZ of December 30, 2001 (as last amended on April 2, 2012). "Code of Administrative Offences of the Russian Federation". Adopted by the State Duma on December 20, 2001: Endorsed by the Council of Federation on December 26, 2001.

29. Sussman S, Levy D, Lich KH, Cené CW, Kim MM, Rohrbach LA, et al. Comparing effects of tobacco use prevention modalities: need for complex system models. Tob Induc Dis. 2013;11(1):2. https://doi.org/10.1186/1617-9625-11-2.

30. Chapman S, Liberman J. Ensuring smokers are adequately informed: reflections on consumer rights, manufacturer responsibilities, and policy implications. Tob Control. 2005;14(suppl 2):ii8–ii13. https://doi.org/10.1136/tc.2005.012591.

31. US Department of Health and Human Services. The health consequences of involuntary exposure to tobacco smoke: a report of the surgeon general, vol. 709. Atlanta: US Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2006.