ORIGINAL RESEARCH

Results of the state policy on tobacco control in the Russian Federation

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ABSTRACT

Introduction: Great attention is paid to the fight against tobacco use as one of the main risk factors for the development of noncommunicable diseases (NCDs) in the Russian Federation. Russia joined the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) in 2008. The following year, the country adopted the National Tobacco Control Strategy, which set out the Government's policy on the issue. Federal Law No. 15-FZ "On Health Protection from Exposure to Environmental Tobacco Smoke and the Consequences of Tobacco Consumption" came into effect in 2013, implementing a range of effective tobacco control measures contained in the WHO FCTC. A number of other anti-smoking laws were also adopted.

The purpose of this paper is to analyse the effectiveness of the WHO FCTC tobacco control provisions implemented within the framework of the state policy of the Russian Federation in the three-year period from 2013 to 2016 by assessing the reduction of tobacco consumption among the general public and the incidence of NCDs caused by smoking, for example, bronchitis.

Methodology: The prevalence of tobacco consumption in the Russian Federation, as well as the effectiveness of state policy measures on tobacco control, were assessed on the basis of the results of two Global Adult Tobacco Surveys (GATS) conducted in the country (in 2009 and 2016, respectively) as part of WHO's Global Tobacco Surveillance System. In order to evaluate the impact of state policy on the incidence of NCDs associated with tobacco consumption, an analysis of trends in the incidence of bronchitis was carried out using official Ministry of Healthcare data from before and after Federal Law No. 15-FZ came into effect (2009–2013 and 2013–2016, respectively).

Results: A comparison of the GATS carried out in 2009 and 2016 testifies to the effectiveness of the measures set out in the state policy on the six main areas of the WHO FCTC. Tobacco consumption among the Russian population has declined significantly, from 39.1% in 2009 to 30.7% in 2016. An analysis of trends in the incidence of bronchitis before and after Federal Law No. 15-FZ came into effect (2009–2013 and 2013–2016, respectively) revealed a statistically significant decrease following the introduction of the law, which correlates with the decrease in the number of active and passive smokers.

Conclusions: The results of the studies demonstrate the effectiveness of state policy on tobacco control in the Russian Federation, which has manifested itself in a statistically significant decrease in tobacco consumption and active and passive smoking. This in turn has led to a reduction in the incidence of NCDs (bronchitis), the development of which is closely associated with both active and passive smoking.

Keywords: TOBACCO CONTROL, PREVALENCE OF TOBACCO CONSUMPTION, PREVENTION OF NONCOMMUNICABLE DISEASES, STATE POLICY ON TOBACCO CONTROL, WHO FCTC, RUSSIAN FEDERATION

INTRODUCTION

Tobacco consumption is the leading cause of death and disability in the world, accounting for 20% of deaths around the world and 17% of deaths in the Russian Federation. Tobacco consumption was widespread in the Russian Federation at the beginning of the 21st century and thus presented a significant health threat to the population, carrying negative medical, demographic and other socioeconomic consequences. Between 300 000 and 400 000 people die every year from illnesses connected with tobacco consumption in the Russian Federation. On average, men lose 9 years of their working lives, and women 5.6 years, as the result of the premature deaths caused by tobacco consumption. The damage to the country's gross domestic product caused by premature deaths due to smoking-related illnesses is around 2%.

Tobacco consumption is a major risk factor in the development of noncommunicable diseases (NCDs), including cardiovascular diseases, oncological diseases, chronic respiratory diseases and

diabetes, all of which are leading causes of death around the world. More than 36 million people die from NCDs (63% of all deaths) every year, 14 million prematurely (i.e. before the age of 70) (*1*). In the Russian Federation 68.5% of all deaths are caused by the main NCDs.

In light of this, the fight against tobacco consumption as one of the main behavioural risk factors around the world has received a great amount of attention since the WHO Convention on Tobacco Control (WHO FCTC) was adopted on 21 May 2003 (*2, 3*).

The purpose of this paper is to analyse the effectiveness of the WHO FCTC tobacco control provisions implemented within the framework of the state policy of the Russian Federation in the three-year period from 2013 to 2016 by assessing the reduction of tobacco consumption among the general public and the incidence of NCDs caused by smoking, for example, bronchitis. The paper presents information on the state policy of the Russian Federation on tobacco control and data on the incidence of tobacco consumption in the Russian Federation and the results of tobacco control measures implemented in 2009–2016 on the basis of Global Adult Tobacco Surveys (GATS) conducted in the country. In addition, the paper analyses the incidence of bronchitis in the Russian Federation before and after WHO FCTC measures were introduced in 2013.

TOBACCO CONTROL LEGISLATION IN THE RUSSIAN FEDERATION

The Russian Federation joined the WHO FCTC in 2008 and since then it has pursued a systemic and consistent state policy aimed at reducing tobacco consumption among the population (*4*).

Pursuant to Article 5 of the WHO FCTC, the Coordination Council for Tobacco Control was established by a decree of the Ministry of Healthcare of the Russian Federation in 2009. The Council has been invested with broad powers to ensure that the Russian Federation fulfils its obligations under the WHO FCTC. As a result, Decree No. 1563-r of the Government of the Russian Federation, dated 23 September 2010, approved the National Tobacco Control Concept for 2010–2015 (*5*). In addition, Federal Law No. 15-FZ "On Health Protection from Exposure to Environmental Tobacco Smoke and the Consequences of Tobacco Consumption" was adopted, setting out the main areas for combating tobacco use as a leading risk factor in the development of chronic diseases. The adoption of this law has allowed a number of effective measures set out in the WHO FCTC to be implemented, including: a smoking ban in certain public places; a complete ban on tobacco advertising and promotion; a tobacco display ban in shops and trade outlets; a ban on the wholesale and retail sale of certain tobacco snuff products (naswar and snus); a significant increase in the "walking distance" to tobacco products; and creating the conditions for educating and informing the population about the dangers of tobacco consumption and the harmful effects of second-hand tobacco smoke. It also contained provisions for providing people with medical assistance to help them quit smoking, treat addiction and offset the consequences of tobacco consumption (*6*). The law also prohibits the retail trade of cigarettes in consumer packaging (packs) containing more than 20 individual cigarettes.

Federal Law No. 15-FZ introduced a phased ban on smoking in public places: a complete ban on smoking in the workplace and in educational, medical, cultural and other public places from 1 June 2013; and a comprehensive ban on smoking in all public eating places from 1 June 2014.

Federal Law No. 268-FZ "On the Technical Regulations for Tobacco Products" was adopted in 2008. It established the requirements for tobacco products sold in the Russian Federation, the rules and forms for assessing the compliance of tobacco products with the established requirements, the cigarette warning label requirements and the rules for identifying tobacco products. Further, with a view to increasing the effectiveness of warning labels on cigarette packaging, the Ministry of Health and Social Development of the Russian Federation developed graphic images depicting the dangers of tobacco. In 2012, it issued Decree No. 490n "On Approval of Warning Labels on the Danger of Smoking, Accompanied by Illustrations". In 2014, the Ministry of Healthcare of the Russian Federation issued a decree approving a list of identity documents acceptable as proof of age in order to prevent minors (18 years and younger) from purchasing tobacco products.

To ensure the effective implementation of Federal Law No. 15-FZ, the Code of the Russian Federation on Administrative Offences was amended to include a list of fines for individuals, officials and legal entities.

METHODOLOGY

STUDY OF THE PREVALENCE OF TOBACCO CONSUMPTION AND THE EFFECTIVENESS OF TOBACCO CONTROL MEASURES IN 2009–2016.

The Global Tobacco Surveillance System developed by WHO provides representative periodic data on key indicators of

tobacco consumption. Two rounds of the GATS have been conducted in the Russian Federation – one in 2009, which established the basic indicators of tobacco consumption, and another in 2016, which provided data that was used to assess the dynamics of these indicators (*7, 8*).

The target group for the survey included men and women over the age of 15 years living in the Russian Federation. The sampling frame used for the GATS survey in the Russian Federation in 2016 was created with reference to the 2010 census. The survey was conducted on the basis of a three-stage stratified sample.

The GATS conducted in the Russian Federation involved the use of a questionnaire for individuals and a questionnaire for households. The questionnaire for households is designed to collect information about all adult residents (men or women based on the sampling strategy) from the population in order to randomly select people who are eligible to complete the individual questionnaire. The individual questionnaire is designed to collect data from the men and women aged 15 years or older who have been randomly selected and fit the eligibility criteria. The individual questionnaire contains the following sections: biographical information; tobacco smoking; hookah smoking; electronic cigarettes; smokeless tobacco; quitting smoking; passive smoking; economic aspects; the media; awareness of the dangers of tobacco and position and opinions on it.

In 2016, a total of 11 458 personal interviews were conducted, with a general response level of 98.2%. In order to make a fair comparison of the situations in 2009 and 2016, only those regions included in GATS 2009 were taken from the full GATS 2016 sample (60 regions in total). Accordingly, a total of 10 688 interviews from GATS 2016 were included in the analysis.

STUDY OF THE DYNAMICS OF THE INCIDENCE OF BRONCHITIS CAUSED BY TOBACCO CONSUMPTION IN THE PERIOD 2009–2016

Given the short amount of time that has passed since Federal Law No. 15-FZ entered into force, bronchitis was chosen as a suitable indicator for evaluating the impact that the Government's tobacco control policy has had on NCDs. Bronchitis is not associated with serious damage to the bronchopulmonary system or with neoplasia, both of which take a long time to form. Numerous scientific studies have demonstrated that tobacco smoke is the primary environmental factor that contributes to the development of bronchitis (*9, 10, 11*). It has been proven that both active and passive smoking lead to the development of the illness (*12*). Bronchitis develops relatively quickly when the person is exposed to the risk factors and declares itself as a complex of respiratory symptoms – a cough and the presence of phlegm. It should be noted that focus programmes aimed at preventing bronchitis have not been adopted in the past decade in the Russian Federation. The only effective Government intervention in this area is the fight against tobacco consumption – a risk factor for bronchitis – which is codified in Federal Law No. 15-FZ, adopted in 2013. Accordingly, a comparative analysis of trends in the incidence of bronchitis (bronchitis, not specified as acute or chronic [ICD-10 Code J40]; simple and mucopurulent chronic bronchitis [ICD-10 Code J41]; and unspecified chronic bronchitis [ICD-10 Code J42]) was carried out for this study for the period 2013–2016. The analysis was carried out using official medical statistics for the Russian Federation, as well as for eight federal districts (*13*), as the Russian Federation occupies a significant territory with different natural and climatic conditions. The Russian Federation's location in the northern part of Eurasia means that its territory includes arctic, subarctic, temperate and partly subtropical climate zones. The temperate zone extends over the largest part of the country's territory. Average daily temperatures across the country range from +6°C to –50°C in January, and from +1°C to +25°C in July. The population of the Russian Federation was 141.9 million in 2009 and 144.3 million in 2016.

In order to estimate prevalence trends, a linear function was calculated using the method of least squares ($y = mx + b$), which best approximated the available data. The direction of the trend was estimated according to the coefficient of the straight line m. When trending upwards, the value of m will be positive; when trending downwards, its value will be negative. The absolute value of m will reflect the rate of change of the indicator. The Wilcoxon signed-rank test was used to assess the statistical significance of trends across all federal districts. Statistical significance was confirmed for $N = 8$ and $\alpha = 0.01$ with a t-statistic value of less than or equal to 0.

RESULTS

PREVALENCE OF TOBACCO CONSUMPTION AND OTHER INDICATORS

The comparative samples of the GATS 2009 and GATS 2016 surveys were used to calculate a number of indicators that reflect the situation in the main areas of tobacco control in the Russian Federation: the prevalence of tobacco consumption; protecting people from tobacco smoke; providing help to people who want to quit smoking; warning people about the dangers

of smoking; enforcing bans on the advertising and promotion of tobacco products, as well as on the sponsoring of events by tobacco companies; and increasing taxes on tobacco products.

Prevalence of tobacco consumption. A comparative analysis of the GATS surveys conducted in 2009 and 2016 reveals that tobacco consumption among the Russian adult population has declined significantly: from 39.1% in 2009 to 30.7% in 2016 (see Table 1).

The prevalence of permanent cigarette smokers among adults declined significantly: from 38.8% in 2009 to 30.3% in 2016 (from 59.8% to 50% among men, and from 21.4% to 14.1% among women) (see Table 1). It should be noted that the relative decrease in regular smokers of tobacco was more pronounced among females (–34.2%) than among males (–16%). The share of former daily smokers increased significantly from 2009 to 2016 (from 18.3% in 2009 to 24.7% in 2016), particularly among women.

Protecting people from tobacco smoke. Table 2 presents the main WHO FCTC indicators that reflect the situation in the Russian Federation with regard to the effect of second-hand tobacco smoke on the population.

As we can see from Table 2, passive smoking in public places decreased significantly. There was also a noticeable reduction in passive smoking at home (from 34.7% [38.7 million people] in 2009 to 23.1% [27.3 million people] in 2016) and in the workplace (from 34.9% [21.9 million people] in 2009 to 21.9% [12.7 million people] in 2016). Passive smoking also fell greatly among adults who had visited various public places within the previous 30 days: Government institutions (from 17.0% in 2009 to 3.6% in 2016); restaurants (from 78.6% in 2009 to 19.9% in 2016); medical organizations (from 10.2% in 2009 to 3.4% in 2016); and public transport (from 24.9% in 2009 to 10.8% in 2016). It is also important to note that there has been a significant reduction in the prevalence of passive smoking among non-smokers in the Russian Federation. In 2009, a total of 26.9% of the non-smoking adult population in the country (9.8 million people) was subjected to passive smoking in the workplace. This figure had dropped to 17.2% (6.5 million people) by 2016. The same trend was observed among the non-smoking population with regard to passive smoking in the home, falling from 21.5% (14.6 million people) in 2009 to 12.9% (10.6 million people) in 2016. It should be noted that the ban on smoking in the workplace was introduced on 1 June 2013, which immediately reduced the effect of the tobacco risk factor on a significant portion of the Russian population. The ban on tobacco smoking in public eating places came into effect on 1 June 2014, which further reduced the impact of environmental tobacco smoke on the Russian population: in 2009, a total of 12.1% of the adult population in the Russian Federation (around 13 million people) was exposed to passive smoking in restaurants, compared to 2.2% (2.6 million people) in 2016. On the whole, the relative change in the prevalence of passive smoking in various public places was the same among men and women. The relative change in the prevalence of passive smoking in the home was higher among women (–37%) than among men (–29.5%).

Providing help to people who want to quit smoking. Table 3 presents the main WHO FCTC indicators that reflect the situation in the Russian Federation with regard to providing help to people who want to quit smoking.

TABLE 1.TOBACCO CONSUMPTION INDICATORS FOR THE ADULT POPULATION IN THE RUSSIAN FEDERATION ACCORDING TO GATS 2009 AND GATS 2016 DATA

Indicator	2009			2016			Relative change		
	All adults	Men	Women	All adults	Men	Women	All adults	Men	Women
	Per cent (95% CI)			Per cent (95% CI)			Per cent		
Permanent tobacco smokers	39.1 (37.8–40.5)	60.2 (58.4–62.0)	21.7 (19.6–23.8)	30.7 (29.3–32.2)	50.6 (48.5–52.7)	14.3 (12.9–15.7)	–21.6*	–16.0*	–34.2*
Permanent cigarette smokers	38.8 (37.2–40.2)	59.8 (58.0–61.5)	21.4 (19.4–23.6)	30.3 (28.9–31.7)	50.0 (47.9–52.0)	14.1 (12.7–15.5)	–21.9*	–16.4*	–34.3*
Permanent smokers of industrially produced cigarettes	38.5 (37.2–39.9)	59.3 (57.6–61.0)	21.4 (19.3–23.5)	30.0 (28.6–31.4)	49.3 (47.3–51.4)	14.1 (12.7–15.5)	–22.1*	–16.8*	–34.2*
Former daily smokers	18.3 (16.9–19.9)	18.8 (17.2–20.5)	17.1 (14.2–20.5)	24.7 (22.9–26.6)	23.4 (21.5–25.5)	28.4 (24.8–32.3)	34.7*	24.8*	66.3*

*$p < 0.05$.

TABLE 2. PROTECTING PEOPLE FROM TOBACCO SMOKE. COMPARISON OF WHO FCTC INDICATORS IN THE RUSSIAN FEDERATION

Indicator	2009			2016			Relative change		
	All adults	Men	Women	All adults	Men	Women	All adults	Men	Women
	Per cent (95% CI)			Per cent (95% CI)			Per cent		
Passive smoking at home at least once per month	34.7 (32.9–36.5)	36.7 (34.5–38.9)	33.0 (30.7–35.3)	23.1 (21.2–25.1)	25.9 (23.6–28.2)	20.8 (18.9–22.8)	−33.4*	−29.5*	−37.0*
Passive smoking at home among non-smokers at least once per month	21.5 (19.7–23.4)	14.8 (12.9–17.0)	24.3 (22.1–26.6)	12.9 (11.5–14.3)	9.1 (7.6–10.9)	14.7 (13.1–16.5)	−40.0*	−38.6*	−39.5*
Passive smoking in the workplace	34.9 (32.4–37.4)	45.7 (42.5–48.9)	25.7 (22.9–28.8)	21.9 (19.5–24.5)	28.3 (25.1–31.8)	15.8 (13.5–18.5)	−37.3*	−38.0*	−38.6*
Passive smoking among non-smokers in the workplace	26.9 (24.2–29.7)	34.0 (30.1–38.2)	23.4 (20.5–26.7)	17.2 (14.9–19.8)	22.7 (19.2–26.5)	14.1 (11.9–16.6)	−36.1*	−33.3*	−39.8*
Passive smoking in public places:									
Government agencies/offices	17.0 (15.3–18.8)	21.2 (18.9–23.8)	13.8 (12.0–15.8)	3.6 (2.7–4.7)	4.2 (3.0–5.8)	3.1 (2.1–4.5)	−79.0*	−80.2*	−77.5*
Medical organizations	10.2 (8.5–12.1)	12.1 (9.8–14.8)	9.1 (7.4–11.2)	3.4 (2.7–4.4)	3.8 (2.8–5.2)	3.2 (2.4–4.2)	−66.2*	−68.1*	−64.8*
Restaurants	78.6 (75.0–81.8)	78.3 (74.0–82.1)	78.8 (74.0–82.9)	19.9 (16.2–24.2)	21.8 (17.2–27.3)	18.1 (14.0–23.1)	−74.7*	−72.2*	−77.0*
Public transport	24.9 (22.5–27.4)	24.5 (21.9–27.2)	25.1 (22.5–28.0)	10.8 (9.0–12.8)	10.8 (8.8–13.2)	10.7 (8.8–13.0)	−56.7*	−55.7*	−57.3*

*$p < 0.05$.

TABLE 3. PROVIDING HELP TO PEOPLE WHO WANT TO QUIT SMOKING. COMPARISON OF WHO FCTC INDICATORS IN THE RUSSIAN FEDERATION

Indicator	2009			2016			Relative change		
	All adults	Men	Women	All adults	Men	Women	All adults	Men	Women
	Per cent (95% CI)			Per cent (95% CI)			Per cent		
Attempted to quit smoking within the previous 12 months	32.1 (30.2–34.0)	29.4 (27.5–31.4)	38.1 (33.7–42.7)	34.7 (32.3–37.1)	33.2 (30.6–35.9)	39.0 (34.6–43.7)	8.1	12.9*	2.5
Received advice from a medical worker on quitting smoking	31.7 (28.9–34.6)	34.1 (31.0–37.4)	27.4 (23.0–32.3)	47.9 (43.4–52.5)	52.0 (46.9–57.1)	38.5 (33.0–44.3)	51.1*	52.4*	40.4*

*$p < 0.05$.

As we can see from Table 3, significant progress has been made in involving health-care workers in helping people to quit smoking. In 2016, health-care workers were 1.5 times more likely to give advice on how to quit smoking than in 2009. Smokers in general, particularly men, are more likely to attempt to quit smoking.

Warning people about the dangers of smoking. Table 4 presents the main WHO FCTC indicators that reflect the situation in the Russian Federation with regard to warning people about the dangers of smoking.

As we can see from Table 4, the adult population in the Russian Federation was fairly well informed about the dangers of smoking in both 2009 and 2016. Nevertheless, women appear to be better aware of this than men. In 2016, smokers began to notice information about the dangers of tobacco consumption contained on tobacco product packaging with increasing frequency. As a result, the number of smokers who have started to think about quitting tobacco based on this information has increased by a statistically significant amount (from 31.7% in 2009 to 36% in 2016).

Enforcing bans on the advertising and promotion of tobacco products, as well as on the sponsoring of events by tobacco companies. Table 5 presents the main WHO FCTC indicators that reflect the situation in the Russian Federation with regard to enforcing bans on the advertising and promotion of tobacco products, as well as on the sponsoring of events by tobacco companies.

As we can see from Table 5, there was a significant reduction in the advertising of tobacco products in the period from 2009 to 2016, including all activities aimed at promoting sales: 87.3% at the point of sale, and 66.1% overall.

Increasing taxes on tobacco products. Table 6 presents the main WHO FCTC indicators that reflect the situation in the Russian Federation with regard to increasing taxes on tobacco products.

As we can see from Table 6, the cost of a packet of industrially produced cigarettes increased by 224.7% over the period in question. Monthly expenses on cigarettes increased to a lesser extent (by 197.9%).

INCIDENCE OF BRONCHITIS

The dynamics of the number of registered cases of first-time bronchitis per 100 000 people (incidence) in the Russian Federation in the period from 2009 to 2016 is presented in Fig. 1.

As we can see from Fig. 1, the incidence of bronchitis per 100 000 of the population of the Russian Federation increased until 2014

TABLE 4. WARNING PEOPLE ABOUT THE DANGERS OF SMOKING. COMPARISON OF WHO FCTC INDICATORS IN THE RUSSIAN FEDERATION

Indicator	2009			2016			Relative change		
	All adults	Men	Women	All adults	Men	Women	All adults	Men	Women
	Per cent (95% CI)			Per cent (95% CI)			Per cent		
Believed that smoking tobacco leads to the development of serious diseases	90.8 (89.6–91.9)	88.0 (86.4–89.5)	93.2 (91.8–94.3)	90.8 (89.6–91.9)	87.8 (86.0–89.4)	93.3 (92.1–94.3)	0.0	−0.3	0.2
Believed that passive smoking leads to the development of serious diseases	81.9 (80.3–83.4)	75.7 (73.4–77.8)	87.0 (85.3–88.6)	81.9 (80.1–83.6)	75.1 (72.6–77.5)	87.5 (85.8–89.0)	0.0	−0.7	0.5
Have noticed information about the dangers of smoking cigarettes, anywhere	68.1 (65.6–70.5)	66.8 (64.2–69.4)	69.1 (66.4–71.7)	81.3 (78.6–83.8)	80.3 (77.2–83.0)	82.2 (79.3–84.7)	19.5*	20.2*	18.9*
Have thought about giving up smoking because of health warning labels on cigarette packets	31.7 (28.9–34.6)	31.6 (28.8–34.5)	31.9 (27.4–36.9)	36.0 (33.4–38.8)	35.7 (32.7–38.9)	37.0 (32.9–41.2)	13.7*	13.1*	15.8

*$p < 0.05$.

TABLE 5. ENFORCING BANS ON THE ADVERTISING AND PROMOTION OF TOBACCO PRODUCTS, AS WELL AS ON THE SPONSORING OF EVENTS BY TOBACCO COMPANIES. COMPARISON OF WHO FCTC INDICATORS IN THE RUSSIAN FEDERATION

Indicator	2009			2016			Relative change		
	All adults	Men	Women	All adults	Men	Women	All adults	Men	Women
	Per cent (95% CI)			Per cent (95% CI)			Per cent		
Have noticed tobacco advertising in shops where cigarettes are sold	43.6 (41.0–46.2)	46.1 (43.3–48.9)	41.6 (38.8–44.4)	5.5 (4.5–6.8)	6.1 (4.9–7.7)	5.0 (3.9–6.4)	−87.3*	−86.7*	−87.9*
Have noticed any kind of cigarette advertising, sponsorship or promotion	68.0 (65.8–70.2)	71.6 (69.3–73.9)	65.0 (62.4–67.5)	23.1 (20.6–25.7)	25.9 (23.0–29.0)	20.7 (18.2–23.4)	−66.1*	−63.9*	−68.2*

*$p < 0.05$.

TABLE 6. INCREASING TAXES ON TOBACCO PRODUCTS. COMPARISON OF WHO FCTC INDICATORS IN THE RUSSIAN FEDERATION

Indicator	2009			2016			Relative change		
	All adults	Men	Women	All adults	Men	Women	All adults	Men	Women
	Per cent (95% CI)			Per cent (95% CI)			Per cent		
Median monthly expenses on cigarettes (in roubles)	560.8 (535.7–588.3)	604.4 (582.8–641.7)	422.9 (395.4–514.4)	1671.0 (1541.3–1824.4)	1817.6 (1731.8–1951.8)	1209.4 (1106.5–1424.3)	197.9*	200.7*	185.9*
Median cost of a packet of 20 industrially produced cigarettes (in roubles)	24.5 (23.2–26.7)	21.9 (21.4–24.7)	35.4 (30.2–38.9)	79.7 (79.5–80.0)	79.6 (79.4–80.0)	81.8 (80.8–85.7)	224.7*	263.3*	131.4*

*$p < 0.05$.

(from 111.5 in 2009 to 873.7 in 2013), before starting to fall (from 938.0 in 2014 to 322.1 in 2016).

The dynamics of the incidence of bronchitis per 100 000 of the population in eight federal districts of the Russian Federation are presented in Fig. 2.

As we can see from Fig. 2, the dynamics of the incidence of bronchitis in individual federal districts was unidirectional, with noticeable periods of increase (up until 2013) and decrease (2013–2016) in incidence.

The results of the statistical linear regression analysis of incidence trends are presented in Table 7.

As we can see from Table 7, the incidence of bronchitis increased in 2009–2013 (positive coefficient *m*) and decreased in 2013–2016 (negative coefficient *m*) in the Russian Federation and in all eight federal districts except the North Caucasian Federal District, where the incidence rate did not change after 2013, although it did slow down considerably. We can thus say that the same tendency towards a reduction in the incidence of bronchitis was observed in all districts, as well as in the Russian Federation as a whole. To determine the statistical significance of the trend, the t-statistic of the Wilcoxon signed-rank test (which was 0) was calculated. The statistical significance of in the dynamics of the incidence of first-time bronchitis for the periods 2009–2013 and 2013–2016 was thus confirmed.

FIG. 1. INCIDENCE OF BRONCHITIS (J40–J42) PER 100 000 POPULATION OF THE RUSSIAN FEDERATION

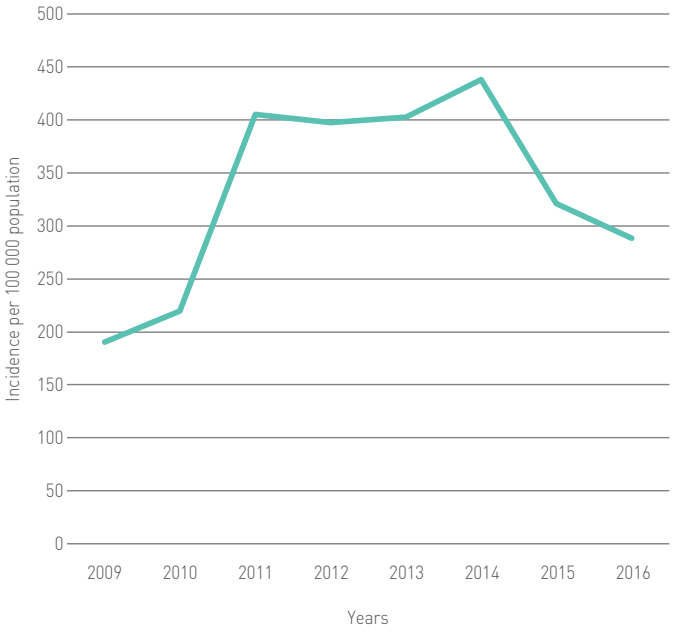


FIG. 2. PREVALENCE OF BRONCHITIS (J40–J42) PER 100 000 POPULATION IN EIGHT FEDERAL DISTRICTS OF THE RUSSIAN FEDERATION

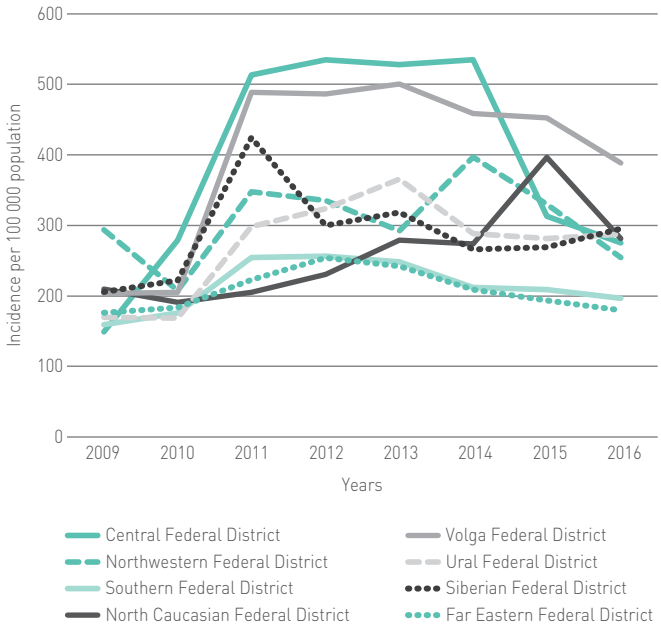


TABLE 7. SLOPE COEFFICIENT (M) OF THE INCIDENCE CHART IN 2009–2013 AND 2013–2016

Region	2009–2013	2013–2016
Russian Federation	0.012834	−0.01582
Central Federal District	0.0081071	−0.008586
Northwestern Federal District	0.010321	−0.00104
Southern Federal District	0.028799	−0.05338
North Caucasian Federal District	0.037706	0.0061282
Volga Federal District	0.008807	−0.02663
Ural Federal District	0.0165323	−0.024955
Siberian Federal District	0.009892	−0.01799
Far Eastern Federal District	0.042023	−0.04708

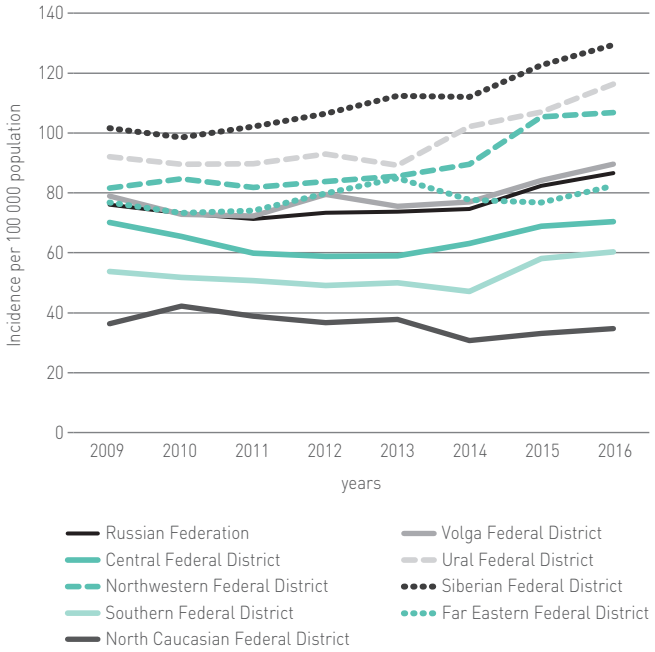
For comparison, the incidence of bronchial asthma – an illness that is allergic in nature and whose development is not directly associated with tobacco smoke – was analysed. Fig. 3 shows the dynamics of the incidence of asthma per 100 000 of the population in the Russian Federation and eight federal districts.

As we can see from Fig. 3, there was a steady increase in the incidence of bronchial asthma in the Russian Federation in 2009–2013. The same trend was observed in most federal districts, although in certain federal districts the trend was more variable in nature.

DISCUSSION

The results of the GATS conducted in the Russian Federation in 2009 and 2016 confirmed the effectiveness of Federal Law No. 15-FZ "On Health Protection from Exposure to Environmental Tobacco Smoke and the Consequences of Tobacco Consumption" in general, as well as of all the WHO FCTC measures introduced. The broad and comprehensive ban on smoking in public places led to a significant reduction in the prevalence of passive smoking in all public places. The results of the survey showed that there was a significant reduction in passive smoking even in the home, where the state cannot

FIG. 3. INCIDENCE OF ASTHMA PER 100 000 POPULATION IN THE RUSSIAN FEDERATION AND EIGHT FEDERAL DISTRICTS IN THE PERIOD 2009–2016



control the ban on smoking, suggesting that the population has voluntarily imposed such a ban in households. Consequently, 4 million fewer people were exposed to passive smoke in the home, and 9.2 million fewer people were exposed to passive smoke in the workplace. Great progress has been made in reducing the impact of tobacco advertising both at the point of sale and in other places. The introduction of strict measures to control the sale of tobacco products to minors (under the age of 18 years), including the mandatory presentation of an identity document of potential customers as proof of age, helped to fight tobacco consumption among adolescents. The price of a packet of industrially produced cigarettes more than doubled, and the decrease in the amount of money spent on tobacco every month indicated that fewer cigarettes were being smoked. The introduction of new warning inscriptions on the packaging of tobacco products about the dangers of tobacco consumption in 2012 resulted in smokers paying greater attention to the harmful effects of smoking and starting to think about quitting. More health workers are involved in helping people to quit smoking. They have started to ask more questions about tobacco consumption and give advice about how to quit. These measures have helped increase motivation among smokers to quit, and the assistance offered by medical professionals has led to higher cessation rates and a drop in the number of people taking up smoking in the first place. The complete ban on the sale of smokeless tobacco helps prevent smokers from transitioning to the consumption of this product. The overall result of the introduction of the state policy on tobacco control is a significant drop in the prevalence of tobacco consumption among the adult population in the Russian Federation.

Despite the short amount of time that has passed since Federal Law No. 15-FZ entered into force, the state policy on tobacco control has had a positive impact on the incidence on NCDs. An analysis of the incidence of bronchitis – a disease that to a large degree develops as a result of both active and passive smoking – demonstrated a change in dynamics before and after the law entered into force. Before 2013, the incidence of bronchitis was on the rise in the Russian Federation as a whole, and in the eight federal districts that were a part of this study. The situation changed after the introduction of Federal Law No. 15-FZ, and the incidence of bronchitis began to fall. This trend was observed in all federal districts, regardless of the climatic zone in which they are located. It should be noted that focus programmes aimed at preventing bronchitis have not been adopted in the past decade in the Russian Federation, and the only effective Government intervention in this area is the fight against tobacco consumption – a risk factor for bronchitis. A comparative analysis of the incidence of bronchial asthma (an illness that is allergic) in nature in the Russian Federation or the eight federal districts for the period 2009–2016 did not demonstrate any significant changes after 2013. We can thus conclude with a high degree of accuracy that the decrease in the prevalence of active and passive smoking is directly related to the decrease in the incidence of bronchitis across the Russian Federation.

CONCLUSION

The comprehensive approach to tobacco control adopted by the Russian Federation and implemented through Federal Law No. 15-FZ "On Health Protection from Exposure to Environmental Tobacco Smoke and the Consequences of Tobacco Consumption" has significantly reduced the prevalence of tobacco consumption. It is thanks to this that the incidence of bronchitis, a disease brought on in large part by tobacco smoke, has been on the decline in the Russian Federation since 2014. Thus, the experience of the legislative implementation of the range of measures set by the WHO FCTC demonstrates the effectiveness of these measures in the fight against tobacco consumption and NCDs and can be put forward as a model for other countries to use. It is also important to create a mechanism for the continuous development and support of the state policy on tobacco control that ensures its effective operation. In 2017, the Ministry of Healthcare of the Russian Federation introduced the priority project "Development of a Healthy Lifestyle", which is a continuation of the tobacco

control policy in the Russian Federation. In particular, as part of the priority project the Ministry of Healthcare plans to expand the list of premises, territories and facilities that are to be free from tobacco smoke, restrict the availability of hookahs and electronic cigarettes in public eating places, establish requirements on the size of shops and kiosks that sell tobacco products, and launch a public awareness project to inform and educate the population about the dangers of smoking.

Conflicts of interest: None declared.

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