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Cigarette pack warning labels in Russia: how graphic should they be?

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Background: Tobacco warning labels on cigarette packs have been shown to reduce cigarette consumption. The current study measures the Russian population's acceptance and preference of graphic (picture + text) tobacco warning labels.
Methods: Nationally representative data were collected from 1778 participants in the Russian Federation in October 2009. A cross-sectional survey was conducted through person-to-person household interviews with respondents aged ≥14 years. Survey questions included standard demographic queries and three study-specific questions. Participants rated the strength of 13 cigarette warning labels according to their effectiveness to deter from smoking. Smoking status and the population's acceptance of similar warning labels was also measured.
Results: A dose–response pattern is apparent between the degree of graphic content of cigarette warning labels and the public's perception regarding the warning label's ability to discourage smoking. Approximately 87% of all respondents thought Russian authorities should require tobacco manufacturers to place graphic warning labels on cigarette packs, while 80% of current smokers wanted their government to enact such enforcement.
Conclusion: The Russian population would strongly support government policy that would require graphic warning labels to be placed on cigarette packs in their country. In order to best deter from smoking, future cigarette warning labels in Russia should be as graphic as possible.

Keywords: cigarettes, graphic, Russia, warning labels

Introduction

One of the tobacco industry's most critical links to the consumer is the cigarette package. Cigarette packages are unique in that, while other products' packages are discarded upon opening, these packs are kept on the smoker's person or nearby until the cigarettes are gone. Furthermore, with each new cigarette, the smoker takes out the pack and may leave it on public display during use, creating a portable advertisement.[1] With increasingly strict advertising regulations placed on the tobacco industry, it has responded by shifting its marketing focus from mass media to point-of-sale marketing. Tobacco firms in the USA increased the percent of their promotional budget allocated to retail marketing from 43% in 1999 to 85% in 2007.[2] In response to impending health warnings in Asia, one Philip Morris' executive remarked, 'Our final communication vehicle with our smoker is the pack itself. In the absence of any other marketing messages, our packaging . . . is the sole communicator of our brand essence. Put another way—when you don't have anything else—our packaging is our marketing'.[3] More recent evidence reveals that with the onset of comprehensive advertising bans in New Zealand, tobacco companies have significantly invested in cigarette packages and in the pack's point-of-purchase displays.[4] Thus, the cigarette pack has become one of the industry's primary marketing mediums to promote brand image.

The Cigarette Labelling and Advertising Act of 1965 in the USA was the first public health effort to educate the public about the danger of tobacco smoke through health warnings by requiring all packs within the country to carry the warning label 'Cigarette Smoking May be Hazardous to Your Health'. Although the debut of tobacco warning labels set the trend for international implementation, early warnings were ineffective at communicating health messages and lowering tobacco smoking.[5] The health warnings lacked good placement (appearing vertically on the side of the pack), contained weak wording and were too small to make a difference.[6]

Although progressive improvements were made in the size and content of warning labels over the years, global cigarette warning labels from the USA to the UK, and from the European Union to Australia continued to be ineffective over the next three decades.[7,8] In December of 2000, Canada unveiled relatively comprehensive labels occupying 50% of both the back and front sides with text warnings accompanied by graphic images; the labels also prohibited misleading terms such as 'light' and 'mild' from appearing on the packages.[9] Shortly thereafter, several countries followed Canada's lead. Today, 167 other countries are committed to similar stricter tobacco control policies that involve warning labels, united under the world's first global public health treaty, the World Health Organization's (WHO's) Framework Convention on Tobacco Control (FCTC).[10]

Article 11 of the treaty establishes new international guidelines for tobacco packaging and labelling and addresses three main areas: package health warnings, restrictions on misleading information, and labelling of cigarette constituents and emissions.[11] The Article serves as the benchmark for international health warning labels. It recommends that pictures be used, in addition to text warning information, on tobacco

packaging. Warning labels that include graphic pictures are intended to take away from the attractiveness of cigarette company's package design and lower the effect that brand imagery has on consumers.[12] Additionally, once graphics are added to the text, warning labels become more conspicuous, thereby better promoting education and behaviour change.[13,14] Graphic warning labels are perhaps even more vital in low income and middle income countries and in countries where two or more languages are spoken, as they overcome low-literacy obstacles.[15]

The Russian Federation ratified the FCTC on 3 June 2008.[16] Implementation and enforcement of the treaty now depends on the Russian government. Current cigarette warning labels in Russia are text only and cover only 4% of the front and 4% of the back of the pack.[17] The Russian State Duma (lower legislative house) and the Federal Council of Russia (upper legislative house) both passed and approved 'Technical Regulations on Tobacco Products' in December 2008, which requires warning labels to cover 30% of the front surface and 50% of the back and allows for pictures to be included.[18] These new regulations are yet to be implemented in the Russian population. The purpose of the current study is to measure the Russian population's acceptance and preference of selected graphic warning labels, varying in the degree of their graphic content and design.

Methods

Population

The Russian Federation is the largest country in the world with respect to land area, but the ninth most populous nation, with 142-million people. The capital of Russia, Moscow, is the largest city in the country, consisting of 8.3-million people. The next largest city is St Petersburg, which has just over 4.6-million people.[19] The country is divided into seven federal districts: The Central Federal District, The North West Federal District, The South Federal District, The Volga Federal District, The Ural Federal District, The Siberian Federal District and The Far East Federal District. The population is mostly Russian, but large ethnic minority clusters whose primary language is not Russian exist throughout the country.

Smoking has contributed to a health crisis in Russia. Life expectancy for males remains lower today (59.3) than it was in 1958 (61.9), and current life expectancy for females (73.1) has barely surpassed its 1965 mark of 72.1.[20,21] Russia's high death rate and low birth rate have led to a shrinking population since the early 1990s that is now declining by almost half a percent each year.[22] Research has shown that cardiovascular disease has long stagnated male life expectancy in Russia, and smoking is a major contributing factor.[22] Smoking accounts for almost 40% of all deaths among middle-aged men, leading to a shortage of labour and imposing serious economic implications.[23] In Russia, at least $24.7 billion (US dollars) is forfeited annually because of productivity loss from smoking-related premature mortality.[22] Morbidity and healthcare costs due to smoking have yet to be calculated, but would likely be enormous.

Ever since Transnational Tobacco Companies (TTCs) bailed Russia out of tobacco shortages in 1990 with an estimated 39-billion cigarettes, they have played a prominent role in the Russian economy. From 1991 through 2000, TTCs invested $1.7 billion (US dollars) in Russian tobacco companies, becoming the single greatest western direct investor.[24] Tobacco firms' contributions during a shaky transition to a market economy led to strong tobacco industry–government relations and have made it hard to pass effective tobacco control policies in Russia. Cigarettes are affordable in Russia, with one pack of filtered cigarettes ranging from $0.33 to $1.10 (US dollars), and non-filtered cigarettes starting as low as $0.15 per pack.[22] Further, with cigarette prices lagging behind Russia's rate of inflation and real wages increasing by 12–15% per year, cigarettes are becoming even more affordable with time. Ross *et al.*[22] found that from 2000 through 2007 inflation-adjusted cigarette prices fell by 40%. Current total taxes on the most sold brand in Russia are 37% of the pack's retail price.[17] The World Bank[25] recommends that cigarette taxes constitute at least two-thirds to four-fifths of the retail price of the pack.

The Russian Federation has emerged from the socio-economic pressures of communism and its downfall to become the fourth largest consumer of cigarettes per capita worldwide, just after Greece, Bulgaria, Serbia, and Montenegro. Data from the Russian Longitudinal Monitoring Survey, conducted annually between 1992 through 2003, showed that smoking prevalence increased from 57% to 63% in men and from 6% to 15% in women, respectively.[26] On the basis of a national interview survey conducted in Russia in 2004, the prevalence of smoking in adults aged ≥18 years was 63% in men and 16% in women.[27] According to the WHO (2008), the prevalence of tobacco smoking among people aged ≥15 years in Russia in 2005 was 70% in males and 27% in females.[28]

Sample

The Russian Public Opinion Research Center (VCIOM) regularly conducts representative, validated surveys of the Russian population.[29] VCIOM is a Russian state-owned joint stock company, which does not own or operate any state property, but the state acts just like an ordinary shareholder. The state does not allocate a budget to VCIOM, but they finance their operations through private and public institutions. We contracted with VCIOM to add three questions to the survey. These additional questions addressed smoking status, and acceptance and perception of a range of warning labels. These survey questions were included at the end of the questionnaire, occupying numbers 45–47 and followed questions concerning socio-demographics, ethnic and religious tolerance, and political opinions. The survey was administered during 16–18 October 2009.

The general sampling methodology involves at least 1600 respondents in the total sample, 7 total Federal Districts, 40 total federal subjects (regions, republics, territories and federal cities), not less than 150 settlements (including large metropolitan areas, middle size cities, small towns and villages), and not less than 5 total respondents at each settlement. The current survey involved 1778 responses.

Within each area, sampling points (settlements) were selected according to the scheme of constructing a sample. In order to construct the sample, the method of random routing sample was used. According to this method, the interviewer only surveyed respondents in residential units (houses, apartments), which were selected according to a certain route. To obtain a representative sample, selection of respondents within each household was regulated by quotas on age, gender and education.

Individuals were eligible to complete the survey if they were aged ≥14 years, were not professionally involved in advertising or marketing, or had completed the Public Opinion Survey within the previous 6 months. These exclusions were made to reduce threats to the internal validity of the study; that is, those in advertising or marketing may have been involved in tobacco smoking sales, which could lead to biased responses. In addition, repeated surveying may lead to a learned response instead of a response that accurately reflects their opinions and behaviors. Yet <1% of the individuals initially contacted were excluded for these reasons.

Instrument

The survey consists of person-to-person household interviews with the survey responses being filled out by a trained interviewer. Each interview required 30–45 min to be completed. Pictures were presented on standard A4 paper (8.27 × 11.69 in.) and the number of images and their order was according to the order demonstrated in this article. All images were shown at the same time in order to allow participants to compare and select fairly. Participants were not restricted by any time limitation during the selection process.

For our research purposes, three questions and 13 graphic images were included in the survey, as follows:

1 How often do you smoke?
   (a) One pack per day or more
   (b) A few cigarettes almost every day
   (c) Sometimes a few cigarettes per week or per month
   (d) I quit smoking and have not smoked for >3 months
   (e) I have never smoked
2 From the presented list of warning labels rate [from 1 (no impact on prevention) up to 7 (high impact on prevention)] those warning labels which will most keep you from smoking.
3 Do you think Russian authorities should require tobacco manufacturers to place similar warning labels on cigarette packs?
   (f) Rather Yes
   (g) Rather No
   (h) Hard to tell

These questions and warning labels were designed in collaboration with Dr David Hammond of the University of Waterloo and Dr Kirill Danishevski of the Open Institute of Health in Moscow, Russia. In May 2009, a convenience sample of 24 people from Moscow, who represented a range of ages and a similar number of males and females, were asked to comment on the content and clarity of the questions and warning labels. Some minor wording changes were made to our three questions. In addition, we found that including the tobacco company brands on the packages was distracting, so these were not included on the graphic warning labels used in the study.

The warning labels may be classified as high, medium and low graphic warning content (figure 1).

High graphic warning content—Images 11 and 12
Medium graphic warning content—Images 1, 2, 3, 4, 7, 8, 9, 10
Low graphic warning content—Images 5, 6, 13

The two high graphic content labels covered 100% of the pack. Half the labels consisted of graphic pictures of tobacco-related mortality, the other half was a boldly printed, high-contrast text warning. One of the high graphic warning labels had red and white text on a black background (Image 11) and the other presented black text on a white background (Image 12). Pathology pictures for both the high and medium graphic labels were taken from current warning labels used in Canada, Thailand and Australia. The medium graphic warning content labels occupied 50% of the package. On Images 1, 3, 8 and 10 the label consisted entirely of a bold white and red text on a black background. On Images 2, 4, 7 and 8 a graphic pathology picture plus a bold white/red text on a black label occupied 50% of the package. The three low graphic warning content labels consisted of the current Russian warning label written in small print and occupying the bottom fifth of the front of the package (Image 5), a warning label presently proposed by authorities to replace the current label which featured a slightly larger, bolder text warning that occupies a third of the front of the package (Image 13), and a warning label consisting of a less graphic picture taken from a Russian national children's anti-tobacco art competition (Image 6).

Statistical techniques

Smoking prevalence was estimated and compared across the levels of selected variables. Measures of association were considered significant at the 0.05 level. Analysis of covariance was used to evaluate and compare means among groups, adjusting for selected variables. Multivariate models were also assessed using Wilks' Lamda. Analyses were performed using the Statistical Analysis System (SAS) software, version 9.2 (SAS Institute Inc., Cary, NC, USA, 2007).

Results

The prevalence of current smokers was 59% ($n = 480$) in males and 24% ($n = 231$) in females. Eleven percent ($n = 91$) of males and 5% of females were former smokers. Among males, smoking prevalence was significantly greater in the age range 20–49 years and in those with just a high school degree (table 1). It was not significantly associated with income, number of people living in the household, federal district or city size. Among women, smoking prevalence was significantly greater in the age range 20–49 years, in those with at least a high school education, in those with higher income and in those with 2–4 people living in the household.

Survey respondents rated the self-perceived effectiveness of each warning label on preventing and reducing smoking on a scale from 1 (no impact) to 7 (high impact) (table 2). The graphic warning labels with the highest level of agreement at being able to discourage smoking are 11 and 12. The least effective are 5 and 6.

In a multivariate analysis of variance, responses for each of the images were regressed on the variables listed in table 1. Sex, federal district, city size and smoking status were statistically significant (Wilks' Lambda $P < 0.01$; table 3). Age, education, income and number of people in the household did not significantly influence the overall rating of the images. For the high graphic images, agreement was higher in women; people in the Ural, Volga and Southern districts; people in Moscow and St Petersburg and in cities <50 K; and former or never smokers.

Approximately 87% ($n = 1538$) agreed that Russian authorities should make cigarette producers place graphic warning labels on cigarette packages. The percent response according to selected variables is also shown in table 3. Consistent with the other results in the table, women and former or never smokers are more supportive of requiring the use of warning labels.

In a multiple logistic regression model, whether graphic warning labels should be used was regressed on each of the variables in table 1, including smoking status. Once smoking status was included in the model, sex and each of the other variables became statistically insignificant.

Discussion

The purpose of this study was to measure the Russian population's acceptance and preference of different types of tobacco warning labels. Results of the study indicate a dose–response pattern between the degree of graphic content of cigarette warning labels and the public's perception regarding the warning label's ability to discourage smoking. In other words, the more graphic the warning label is, the more effective its impact. This is consistent with recommendations from Article 11 of the WHO Framework Convention on

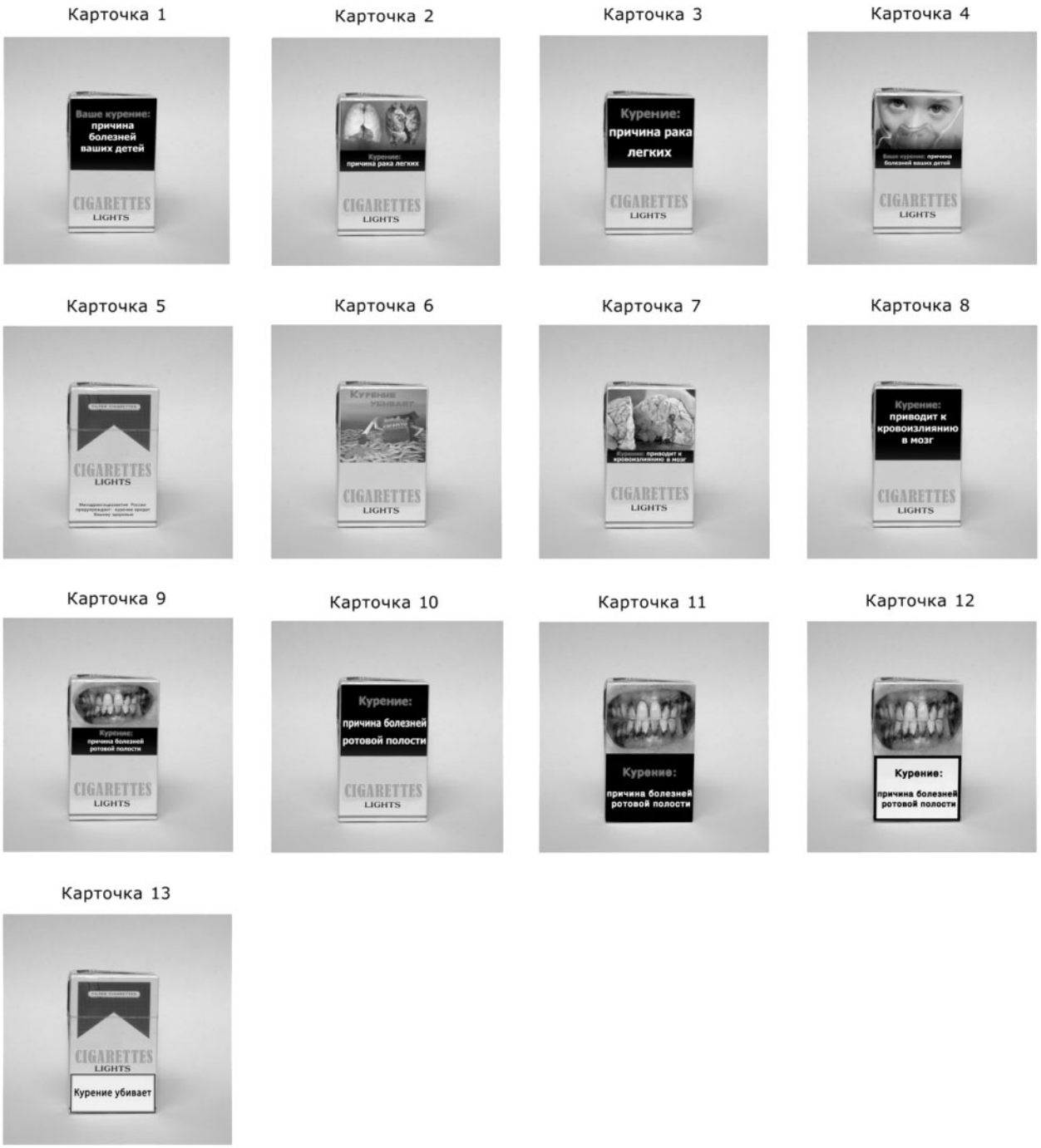

Figure 1 Graphic warning labels. The English interpretations for these warning labels are: (i) your smoking may cause disease in your children; (ii) smoking causes lung cancer; (iii) smoking causes lung cancer; (iv) your smoking may cause disease in your children; (v) the Russian Ministry of Public Health and Social Development warns: smoking is harmful to your health; (vi) smoking kills; (vii) smoking leads to stroke; (viii) smoking leads to stroke; (ix) smoking causes oral disease; (x) smoking causes oral disease; (xi) smoking causes oral disease; (xii) smoking causes oral disease and (xiii) smoking kills

Tobacco Control, and from previous research that has measured the impact of graphic warning labels.[13,30–33]

The second major finding from this study is the large public support for the use of graphic warning labels. In all probability, this survey provided the first occasion for respondents to contrast graphic warning labels with the small printed text warning labels used on current Russian cigarette packages. Strong support for graphic warning labels was seen across all federal regions, all sizes of communities, in both sexes, and among current and former smokers and non-smokers. The lowest support was seen among current smokers, but even 80% of this group favoured the use of graphic warning labels. The strong consensus of opinion for using graphic warning labels in Russia is consistent with public opinion research conducted elsewhere.[34] A 2008 study of Russian public attitudes toward various tobacco control policies showed that 44% of respondents felt that current warning labels were sufficient. Only one-third of the respondents favoured the use of pictorial warning labels and one-fourth favoured the use of bolder text. However, these responses were made by respondents who had not seen examples of graphic warning labels. The greater support in the current study may have been because the respondents saw an array of examples

of graphic warning labels. In a consistent manner, one study showed that if a respondent could see actual graphic warning labels, their support for this tobacco control policy tool increases.[35]

Table 1 Smoking status in the Russian Federation according to selected variables

	n	Male smokers *n* (%) 480 (59)	χ^2 *P*-value	Female smokers *n* (%) 231 (24)	χ^2 *P*-value
Age					
14–19	198	43 (44)	<0.01	19 (19)	<0.01
20–29	377	124 (64)		64 (35)	
30–39	290	90 (64)		53 (35)	
40–49	303	99 (68)		42 (27)	
50–59	294	79 (63)		36 (21)	
≥60 years	316	45 (40)		17 (8)	
Education					
LT high school	218	51 (45)	<0.01	9 (9)	<0.01
High school	585	183 (67)		74 (24)	
Vocational school	626	169 (60)		94 (27)	
University	349	77 (53)		54 (26)	
Income					
LT 10 000 Rubles	392	79 (54)	0.37	40 (16)	<0.01
10 000–19 999 Rubles	495	126 (57)		66 (24)	
20 0000–29 999 Rubles	294	94 (65)		43 (29)	
≥30 000 Rubles	256	73 (61)		50 (37)	
Missing information	341	108 (59)		32 (20)	
Number of people in household					
1	194	31 (54)	0.43	20 (15)	
2	431	116 (56)		55 (25)	0.04
3	583	183 (63)		80 (27)	
4	397	107 (57)		56 (27)	
≥5	173	43 (58)		20 (20)	
Federal district					
Central	468	126 (59)	0.88	56 (22)	0.34
North-Western	171	49 (63)		31 (33)	
Southern	282	76 (58)		31 (20)	
Volga	381	105 (60)		26 (13)	
Ural	154	38 (54)		36 (43)	
Siberia	239	61 (55)		31 (24)	
Far East	83	25 (64)		20 (46)	
City size					
Moscow and St Petersburg	203	58 (61)	0.47	39 (36)	< 0.01
Million and more	123	28 (51)		14 (21)	
500–999K	189	51 (61)		25 (24)	
100–499K	322	85 (57)		48 (26)	
50–99K	141	34 (51)		22 (29)	
LT 50K	192	51 (58)		25 (24)	
Village	598	173 (63)		58 (18)	

Graphic tobacco warning labels on cigarette packs have been shown to effectively improve knowledge of the health effects of smoking, discourage uptake of smoking, and prevent relapse, and reduce cigarette consumption.[36,37] This is particularly important in places where tobacco prevention efforts are not in place or well supported. In Russia, current tobacco-control laws are not widely regulated and enforced.[38]

Tobacco firms' involvement in Russian government perpetuates what Gennady Onishchenko, Russia's chief sanitation officer, calls the tobacco industry's 'nicotine genocide' of the Russian people.[39] Tobacco allies within the Russian government will most likely oppose the use of effective

Table 3 Mean response scores to high, medium and low classified warning labels

	High[a] Mean[b]	Medium[a] Mean[b]	Low[a] Mean[b]	Graphic warning labels should be used %
Sex				
Male	**4.63**	**4.20**	**3.74**	**83**
Female	**5.13**	**4.74**	**4.12**	**90**
Federal district				
Central	**4.65**	**4.48**	**4.25**	88
North-Western	**4.81**	**4.31**	**3.38**	86
Southern	**4.97**	**4.52**	**4.02**	83
Volga	**5.20**	**4.56**	**3.73**	86
Ural	**5.35**	**5.09**	**5.08**	84
Siberia	**4.36**	**3.92**	**3.31**	86
Far East	**4.81**	**4.41**	**3.72**	96
City size				
Moscow and St Petersburg	**5.22**	**4.34**	**3.70**	85
Million and more	**4.48**	**4.34**	**3.70**	81
500–999K	**4.91**	**4.91**	**4.49**	84
100–499K	**4.85**	**4.21**	**3.74**	87
50–99K	**4.4**	**3.95**	**3.21**	82
LT 50K	**5.58**	**5.22**	**4.65**	88
Village	**4.72**	**4.32**	**3.75**	89
Smoking status				
Current	**4.14**	**3.67**	**3.10**	**80**
Former	**5.35**	**4.90**	**4.25**	**84**
Never	**5.15**	**4.84**	**4.43**	**92**

Bolded items represent significance at $P < 0.05$.
a: High graphic warning content (11, 12); medium graphic warning content (1, 2, 3, 4, 7, 8, 9, 10); and low graphic warning content (5, 6, 13)
b: Means adjusted for the other variables in the table

Table 2 Summary of effectiveness evaluation of labels for discouraging smoking [1 (no impact on prevention and reduction) to 7 (high impact on prevention and reduction)]

Image	No.	1 %	2 %	3 %	4 %	5 %	6 %	7 %	Mean (SD)	Ranking[a]	Top choice[b]
11	1769	20	4	7	8	9	13	39	4.77 (2.36)	1	1249
12	1769	20	5	6	8	9	13	39	4.75 (2.38)	2	1248
9	1769	20	5	6	8	10	14	37	4.70 (2.35)	3	1184
7	1768	20	5	7	9	10	13	36	4.67 (2.35)	4	1172
4	1769	21	5	7	10	11	12	34	4.59 (2.35)	5	1129
2	1769	21	6	7	10	10	12	34	4.56 (2.35)	6	1110
8	1769	26	7	8	10	10	10	29	4.16 (2.4)	8	996
10	1769	26	8	8	9	10	11	28	4.11 (2.41)	9	970
3	1769	26	9	8	9	10	11	27	4.07 (2.4)	10	961
13	1769	29	9	6	9	7	11	29	4.05 (2.49)	7	931
1	1769	30	8	7	9	9	10	27	3.99 (2.45)	11	929
6	1768	28	10	8	10	9	10	25	3.92 (2.41)	12	905
5	1766	36	9	7	8	7	9	24	3.65 (2.48)	13	876

a: Reflects the ranking of the images according to the number of highest ratings received
b: Reflects the number of highest ratings given by each respondent. Respondents could have given more than one highest rating across the labels (the highest rating may have been a value <7)

graphic warning labels. This study demonstrates that any opposition to better warning labels is done in defiance of the public's will and best judgment of what will reduce tobacco consumption in Russia.

It should be noted that increased size of warning labels has been linked to improved impact on smokers (citation 12). Our study validates those findings by comparing the effectiveness of Images 11 and 9 at discouraging smoking. Images 11 and 9 showed the exact same design, only differing in size (100 and 50% of the pack, respectively). Accordingly, Image 11 received a number 1 ranking in effectiveness at discouraging smoking and Image 9 received a number 3 ranking. Not including the tobacco brand name and design could partially account for differences between the warning labels' effectiveness, but this was not addressed in the current study.

We did not include supportive efficacy information on the sample graphic warning labels in this study. Such messages would include information on how to quit smoking (i.e. toll-free cessation 'quit line' number) and encouragement to quit. Future studies in Russia can determine the potential impact of graphic warning labels supported by efficacy information. Another potential limitation is that the two images with the highest graphic content (11 and 12) and the two images with the lowest graphic content (5 and 6) appeared next to each other when shown to the participants. A more randomized display of images may have been preferred. Yet because all the images were displayed at the same time, this is unlikely to have biased the results.

In conclusion, the Russian Federation ratified the FCTC and is now responsible to implement associated policies. Article 11 of the treaty recommends large warning labels that are graphic in nature. Such warning labels have proven to be effective at reducing smoking. This study confirmed a positive dose–response relationship in Russia between the degree of graphic content on a cigarette warning label and the warning label's ability to deter from smoking. A majority (87%) of the representative population in Russia would like graphic warning labels placed on cigarette packs.

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Conflicts of interest: None declared.

Key points

- Article 11 of the world's first global public health treaty recommends that in addition to text warning information on tobacco packaging, that pictures be used. The Russian Federation ratified the treaty on 3 June 2008. Current cigarette warning labels in Russia are text only and cover only 4% of the front and 4% of the back of the pack.
- A dose–response pattern was observed in the current study between the degree of graphic content of cigarette warning labels and the public's perception regarding the warning label's ability to discourage smoking.
- Strong support (87%) was observed for graphic warning labels across all federal regions, all sizes of communities, in both sexes and among current and former smokers and non-smokers. The lowest support was seen among current smokers, but even 80% of this group favoured the use of graphic warning labels.

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