



Tobacco Control and Public Health in Eastern Europe

Khakimova, L., Ananjeva, G., Bersenev, D., & Andreeva, T. I. (2016). Social gradients in responsiveness to messages on children's tobacco smoke exposure. *Tobacco Control and Public Health in Eastern Europe*, 6(1), 15-20. doi:<http://dx.doi.org/10.6084/m9.figshare.4487705>

Social gradients in responsiveness to messages on children's tobacco smoke exposure

Luiza Khakimova, Galina Ananjeva, Dmitriy Bersenev, Tatiana I Andreeva

BACKGROUND: Health communication campaigns aimed to diminish morbidity and mortality caused by smoking are expected to impact a complicated causal pathway starting from attracting the attention of the target audience, increasing knowledge, changing behaviors, and finishing with a lower risk of death at the end. The purpose of this pilot study was to conduct a formative evaluation of the posters covering issues related to tobacco smoke exposure of small children and to explore who are those people who pay more attention to the posters.

METHODS: Observation was conducted in the underground carriages in Kazan city, Russian Federation, where posters were placed on the walls. Registered characteristics of passengers included whether the passenger was looking at the poster (outcome); gender, age, clothing of the passenger, whether a passenger is accompanied by somebody else and communicates with this person, whether a passenger holds gadgets, books or newspapers, whether a passenger looks at the screen of the monitor in the carriage. Some of the posters were also discussed in interviews.

RESULTS: The proportion of those who paid attention to the poster was on average 19%, ranging from 13% to 25%. The only variable associated with the outcome was passenger's clothing considered as a proxy for SES collapsed into three categories: (1) poorly dressed, (2) commonly dressed, (3) well-dressed. All the posters where this association was found were covering prenatal and little children's secondhand smoke exposure.

CONCLUSIONS: This pilot study has generated a hypothesis, which can be used and tested in further social marketing campaigns. Lower SES passengers were paying more attention to the posters than those better off. If mothers of small children who live in families of low SES with smoking fathers or grandfathers are the primary target group for addressing this problem, metro could be the proper place for such campaigns.

KEYWORDS: smoking; secondhand smoke exposure; social advertising; socioeconomic status; social marketing; audience segmentation.

INTRODUCTION

Implementing healthy public policies requires various types of evidence which cover not only the effects of interventions but also the need for them, feasibility, acceptability, and strategies to support implementation (Oliver et al., 2005). Among other aspects, consumer or target group perspective needs to be taken into account through qualitative formative re-

search (Mackert, 2012). Health communication campaigns aimed to diminish morbidity and mortality caused by smoking are expected to impact a complex causal pathway of events starting from attracting the attention of the target audience, increasing knowledge, changing behaviors, and finishing with a lower risk of death at the end.

The effects of social advertising campaigns aimed to show the dan-

gers of secondhand smoke exposure and to gain support for smoke-free policies are measured at different levels as well. Knowledge change is usually considered a proximal indicator (Thrasher et al., 2011). Policy support might be a more distant outcome less strongly associated with the intervention dosage (Fosson, McCallum, & Conaway, 2014).

Similarly to commercial marketing, social marketing campaigns aimed at behavioral change (Andreasen, 2003) imply segmentation (Walsh, Hassan, Shiu, Andrews, & Hastings, 2010) of the audience to produce the desired effect.

The purpose of this study was to conduct a formative evaluation of the posters addressing the issues related to tobacco smoke exposure of small children. We aimed to explore (1) which characteristics of the posters attract the audience, and (2) who are those people who pay more attention to the posters.

To reach this goal, we employed mixed methods of research with various audiences. Most of the methods of data collection were qualitative: observation and in-depth interviews. Part of the collected observation data was further found to be quantifiable and was analyzed to reveal associations.

METHODS

Posters sized 90x30 cm were developed and printed for placement in the underground carriages in Kazan city, Russian Federation.

Members of research team conducted observation in those metro carriages where one of the posters was placed on the wall. The observation was carried out during six months in daytime on weekdays. We aimed to record reactions of about 50 passengers per poster. The observers registered the characteristics of passengers who were traveling by metro and potentially could pay attention to the poster. The initial idea to conduct interviews in the underground carriages with passengers who showed interest to the poster was found unreal-

Table 1. Proportion of passengers paying attention to the posters by passenger characteristics

Poster	Variables	Values	Number of passengers	Paid attention N (%)	Pearson Chi-square p-value
All posters	Gender	Male	85	17 (20.0%)	0.842
		Female	127	24 (18.9%)	
	Use of gadgets	Yes	50	6 (12.0%)	0.133
		No	162	35 (21.6%)	
	Talking to somebody nearby	Yes	18	5 (27.8%)	0.343
		No	194	36 (18.6%)	
	Standing by the exit	Yes	10	1 (10.0%)	0.444
		No	202	40 (19.8%)	
	Looking at the monitor	Yes	12	3 (25.0%)	0.609
		No	200	38 (19.0%)	
Reading a book or a newspaper	Yes	3	0 (0.0%)	0.393	
	No	209	41 (19.6%)		
Clothing	(1) poorly dressed	21	10 (47.6%)	0.002	
	(2) commonly dressed	167	28 (16.8%)		
	(3) well-dressed	24	3 (12.5%)		
Specific posters					
#21	Clothing	(1) poorly dressed	4	3 (75.0%)	0.010
		(2) commonly dressed	18	2 (11.1%)	
		(3) well-dressed	3	0 (0.0%)	
#23		(1) poorly dressed	7	3 (42.9%)	0.087
		(2) commonly dressed	31	5 (16.1%)	
		(3) well-dressed	8	0 (0.0%)	
#30		(1) poorly dressed	1	1 (100.0%)	0.029
		(2) commonly dressed	45	5 (11.1%)	
		(3) well-dressed	1	0 (0.0%)	



Figure 1. Poster #21: almost one in two children is exposed to tobacco smoke at home. Let all the children be the first ones! "More than 40% of all children are forced to inhale tobacco smoke in their homes. Make your home free of tobacco smoke. Make free your balcony, toilet, kitchen, staircase and the car".

istic due to noise. Thus only observation was conducted with this primary target group.

The outcome variable was whether the passenger was looking at the poster. While the amount of attention varied, we analyzed this variable as a dichotomous one. As many other posters were seen in the carriages, the outcome was considered positive if the observer noticed that the passenger looked at the poster for a longer time than at posters with commercial advertising.

Other recorded characteristics were gender, approximate age, whether a passenger was accompanied by somebody else and communicated with this person, whether a passenger had any gadgets in hands or headphones in the ears, whether a passenger looked at the screen of the monitor placed in the carriage, whether a passenger was reading a book or a newspaper. Observers also described the clothing of the passengers; while most were described as those 'commonly dressed', some others were described as 'poorly dressed', 'below average', 'in sporting clothing', 'in national Muslim clothing', 'stylish', 'business style', 'well-dressed', etc. At a later stage of analysis, the categories for this variable were col-

lapsed into three groups: (1) poorly dressed, (2) commonly dressed, (3) well-dressed.

We report all associations with $p < 0.2$ due to the small size of our sample and low study power.

Additionally, some of the posters were discussed during in-depth interviews. Participants of various community-based preventive events, in which the research team was involved, were invited to consider the posters and to comment on those which they liked or disliked. During these discussions, the researchers asked the participants, which reactions and in whom these posters might provoke and to whom they might be helpful. We do not report here the detailed results of these interviews but only some of the details related to particular posters.

RESULTS

Characteristics of 212 passengers were recorded. They were traveling in seven carriages where seven various posters were placed. Numbers of observed passengers varied from 9 to 47 per poster. The proportion of those who paid attention to the poster was on average 19%, rang-

ing from 13% to 25%; however, this difference was not statistically significant.

The only variable that was associated with the outcome in either the whole sample or in the subsamples by posters, was the variable characterizing the passenger's clothing. Numbers of passengers and percentages of those who paid attention to a poster are shown in Table 1.

With all three posters where associations were found, the passengers in poorer clothing paid more attention to the posters.

All these posters for which the associations were found were concerned with tobacco smoke exposure of children.

Poster #21 displays two children and states that almost one in two children is exposed to tobacco smoke at home (Fig. 1). Participants of further interviews emphasized that the text on the poster is attracting attention and that the poster is more appealing to non-smokers than to smokers.

Poster #23 (Fig. 2) appeals to mother's protection of her children against secondhand tobacco smoke. This poster was the only one where younger passengers were more

likely to pay attention to it, and the estimated age was 38.2 (95% Confidence Interval [CI] 32.9–43.6) among those who did not look at the poster and 29.1 (95%CI 17.1–41.14) among those who looked ($p=0.148$). In interviews, participants characterized the poster as helpful for both adults and children although the respondents did not like the picture.

Poster #30 (Fig.3) attracts attention to oxygen insufficiency in an intrauterine baby whose mother smokes. No comments have been collected for this poster.

DISCUSSION

This is a pilot study which suggests a hypothesis for segmentation of the audience with regards to smoking-related social ads. The clothing descriptions recorded by the research team might be a proxy for socio-economic status. Presumably lower SES passengers were paying more attention to the posters than those better off.

Measuring SES is a known challenge in the studies related to social epidemiology and social determinants of health with most indicators

being applicable to some societies and inappropriate to others. While we could identify just a few studies which considered clothing among other input indicators for measuring SES (Somi et al., 2008), and there might be plenty of instances where clothing is tangential to the socioeconomic status, still, we believe that in Russia clothing can reflect SES pretty well, and a well-known social epidemiologist Michael Oakes (Oakes & Rossi, 2003) lists clothing among other common indicators of SES (Oakes).

All the posters where the described association was found were addressing the issue of little children's exposure to tobacco smoke including both prenatal and secondhand smoke exposure.

Studies conducted in Wales (Moore, Holliday, & Moore, 2011) and Germany (Kuntz & Lampert, 2016) revealed that after the introduction of smokefree policies in public and workplaces, secondhand smoke exposure decreased in children of higher socio-economic status but not in lower-SES ones. It is possible that lower-SES passengers observed in Kazan underground,

who paid attention to the posters, were from families and especially extended families with several generations living together in one apartment where some of the parents or grandparents smoke.

This study was conducted as a pilot and exploratory one and bears several limitations. The first one is related to quite a small sample size. The descriptions of the passengers made by observers were subjective and could differ between researchers. Besides, initially, these descriptions were not conceived as a measurement of SES. The amount of attention that passenger devoted to the poster was also difficult to quantify. Some of the characteristics (whether a passenger was accompanied by somebody else and communicated with this person, whether a passenger had any gadgets in hands or headphones in the ears, whether a passenger looked at the screen of the monitor placed in the carriage, whether a passenger was reading a book or a newspaper) were recorded for only some passengers, so it is possible that more associations could be found with more rigorously collected data.



Figure 2. Poster #23: you can protect your loved ones from secondhand smoke. "I am five; I love my mom a lot. I like playing, and talking and walking with her. But during every walk, there is the time which I don't like. This is when she requires me not to come up. At these moments she smokes. I want to be as slim, and beautiful and wonderful as my mom. She laughs at me when I walk and speak as she does. When I take a pencil in my mouth and inhale, she becomes very angry. Probably, there is something in those cigarettes which changes my mother a lot; she becomes angrier because of them."



Figure 3. Poster #30: Where is the oxygen? A baby in the uterus of a smoking mother starves. It takes more than 7 hours for all the carbon monoxide to come out of the fetus's blood and to get substituted by oxygen. Thus, a chronic hypoxia is formed. It persists even when the mother does not smoke including night time. Feed your baby with oxygen!

Nevertheless, the study has generated an interesting hypothesis, which can inform further social marketing campaigns. If mothers of small children who live in families of lower SES with smoking fathers or grandfathers are the primary target group for addressing this problem, metro, which is more likely used by less affluent people, could be the proper place for such campaigns. While the initial target group of the social advertising campaigns was understood as middle-aged people, the acquired results might serve for further segmentation of the audience.

CONCLUSION

This pilot study has generated a hypothesis, which can be used and tested in further social marketing campaigns. Underground passengers with lower socioeconomic status were paying more attention than those better off to the posters portraying the dangers of tobacco smoke exposure and appealing to mother's role in the protection of her children. If mothers of small children who live in families of low socioeconomic status with smoking fathers or grandfathers are the primary target group for ad-

ressing this problem, metro could be the proper place for such campaigns.

ABOUT THE AUTHORS

Luiza Khakimova is affiliated to the Center of addictions prevention, Kazan, Russian Federation; ORCID 0000-0002-4360-3173
Email: galluiza@mail.ru

Galina Ananjeva is affiliated to the Center of addictions prevention, Kazan, Russian Federation; ORCID 0000-0001-5423-1494
Email: kazan_choice@list.ru

Dmitriy Bersenev is affiliated to the Center of addictions prevention, Kazan, Russian Federation; ORCID 0000-0001-8558-9755
Email: godofwar@yandex.ru

Tatiana I Andreeva, MD, PhD, took part in the study as an independent researcher; ORCID 0000-0001-5663-6225
Email: tatianandreeva@gmail.com

This paper was received: November 9, 2016; accepted: November 26, 2016; published: December 30, 2016.

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