

EPIDEMIOLOGIC ASPECTS RELATED TO TOBACCO SMOKING AS RISK FACTORS FOR FEMALE WORKERS EMPLOYED IN RETAIL TRADE

T.N. Inglik, N.M. Chernyavskaya, L.B. Aybazova

Amur State University of Humanities and Pedagogy, 17/2 Kirova Str., Komsomolsk-na-Amure, 681000, Russian Federation

Tobacco smoking is widely spread among population and it results in unfavorable forecasts as regards population health; it is truly a vital social problem in Russia. We chose the following research object: female workers employed by a retail network which consisted of both grocery stores and catering outlets. Our research goal was to examine epidemiologic aspects related to tobacco smoking; the research was performed among workers via anonymous questioning. As a result, we detected that 60% of workers smoked. The share was even greater among women aged 40–50 as 77.8 % of them had this bad habit. We also detected that women in the examined sampling tended to start smoking at an earlier age than it had used to be; the trend is quite similar to those observed across Russia. We investigated how aware our respondents were of negative consequences tobacco smoking could lead to; the investigation revealed that non-smoking respondents were better aware that smoking was a hazardous and really bad habit than those who smoked. We examined peculiarities that we detected in prevalence of false ideas among women depending on their smoking behavior and age. Smoking women aged 30–40 had very little knowledge on the subject.

We assessed intensity and a type of smoking and revealed that only each fifth respondent smoked only occasionally while others smoked cigarettes in average or large numbers. 33.3 % of smoking women younger than 30, 14.3 % of women aged 40–50, and 10 % of women aged 30–40 had strong nicotine dependence. A desire to get some support in a complicated psycho-emotional situation was a prevailing motive for tobacco smoking among the respondents; it could be related both to their work activities and to weaker behavioral regulation. The research also revealed that non-smokers supported anti-smoking measures more actively.

Key words: workers employed in retail trade, prevalence and motives for smoking, negative consequences of smoking, types of nicotine dependence, anti-smoking measures

In the Russian Federation an average number of people employed in retail trade and catering has grown by more than 18.6% from 2010 to 2016 and amounted to 11.5 million people in that year¹. Retail trade provides jobs for 20% working women and it is the highest figure among all the branches of the country economy [1]. Given that, examination of the branch peculiarities and minimization of risk

factors that cause health losses by female workers allows to consider issues and solve tasks in the sphere on a national scale.

Tobacco smoking is known to be a behavioral risk factor that causes, together with other factors, occurrence of chronic non-infectious diseases; these diseases lead to huge economic losses for the state and thus impede its stable development. Thus, the

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Tatyana N. Inglik – Candidate of Pharmaceutical Sciences, Associate Professor at Department for Life Safety and Natural Sciences (e-mail: t.inglik@yandex.ru; tel.: +7 (914) 178-19-45, ORCID: <https://orcid.org/0000-0002-0723-1667>).

Nadezhda M. Chernyavskaya – Candidate of Biological Sciences, Associate Professor, Head of Department for Life Safety and Natural Sciences (e-mail: nadya-chery@yandex.ru; tel.: +7 (914) 189-61-43, <https://orcid.org/0000-0001-6370-5874>).

Larisa B. Aybazova – Senior lecturer at Department for Life Safety and Natural Sciences (e-mail: aibazovm@mail.ru; tel.: +7 (962) 287-47-35, <https://orcid.org/0000-0002-5941-0130>).

¹ Labor and employment in Russia. 2017: Statistical data collection / Rosstat. – V78. – M., 2017. – 261 p.

WHO Framework Convention on Tobacco Control (2003) considers tobacco smoking pandemic to be a global issue that causes serious disastrous outcomes for people's health and induces negative social, economic, and ecologic processes all the world as well².

Negative impacts exerted on human health by tobacco smoke are a key concern for medical experts; tobacco-related diseases are a greatest threat for public health care. As per data provided by the RF Ministry for Public Healthcare and Social Development, annually more than 270 thousand people die due to tobacco smoking; smoking-related death cases among middle-age population in the RF account for 36% among men and for 7% among women. Smoking is one of the most significant risk factors that cause occurrence of cardiovascular, respiratory, and oncologic diseases and are basic causes of death. Thus, up to 90% of all the lung cancer cases, 75% of chronic obstructive lung disease cases, 25% of all the ischemic heart diseases cases, and adverse clinical course of tuberculosis are related to smoking [2].

Nowadays, a correlation between impacts exerted by tobacco smoke and reproductive function disorders is well proven; these disorders include a decrease in fertility, early menopause, menstrual cycle disorders, and cervical carcinoma risk (especially when a girl starts smoking at a rather young age) [3].

Smoking by pregnant women increases perinatal morbidity and causes neonatal adaptation disorders [4]. Nicotine as a neurotoxic substance causes a delay in development of the central nervous system and fetal development; greater risk of crib death and risk of psychoneurological and functional disorders in children born from smoking parents [5].

However, despite all these concerns by medical society, smoking is still widely spread. Thus, according to statistical data provided by the WHO, in 2013 1.1 billion people all the world smoked, including 950 million

man and 177 million women; so, as we can see, total number of smokers amounted to 21% of the overall adult population in the world [6].

Unfortunately, in Russia smoking has been and still remains one of the most widely spread bad habits; a significant part of the country population has it. In 2010 38.4% of the country citizens smoked; 61.3% men and 19.4% women who are older than 15 are tobacco smokers. As per the WHO data collected in 2013, 59.8% men and 22.7% women in Russia were smokers [7, 8].

Russian Public Opinion Research Center (RPORC) performed a questioning on the issue in 2017; according to its results, smokers account for approximately 32% of the country population. We can note that a number of smokers tends to decrease slightly, both in Russia and in some post-Soviet countries [9, 10]. However, a number of smoking citizens in the country is still high and amounts to more than 44 million people. Also, in spite of a certain decrease in volume of cigarettes sales over recent years, cigarettes consumption per capita in Russia remains one of the highest in Europe and amounted to 2,227 cigarettes in 2014³.

A number of female smokers in Russia tends to be growing, and this fact is especially alarming. Thus, if in 1992 only 7% women in Russia smoked, the figure grew to 19% in 2008, and even to 30% in megacities. Prevalence of tobacco smoking among women has grown by 3.3 times since 1980ties³.

We analyzed literature data on prevalence of tobacco smoking among various age groups and revealed that the greatest share of female smokers was detected among women aged 15-24 and 25-39 where it accounted for 29.8% (in both groups). each fifth Russian woman aged 40-54 smoked (19.6%); each tenth, among those aged 55-69 (9.4%) [11]. On the other hand, The Civic Chamber of the Russian Federation issued a report where it stated that a number of smoking women has grown recently not only among young women (aged 20-39)

²The WHO Framework Convention on Tobacco Control // The World Health Organization. – Geneva, 2003. – URL: http://apps.who.int/iris/bitstream/10665/42811/4/9789244591017_rus.pdf?ua=1 (date of visit June 18, 2018).

³Russian statistical annual. 2015: Statistical data collection / Rosstat. – M.: rosstat, 2015. – 728 p.

but also among older ones, by 4.7 times among women aged 40-47, and by 3.7 times, among those aged 50-59⁴.

A lot of researchers note that a risk of tobacco smoking dependence is closely related to a social and economic status (education, occupation, income level, and availability of material wealth)⁴ [12]. Thus, epidemiologic research performed in Moscow revealed that prevalence of smoking amounted to 33.7% among women with higher education, and to 50% among those without it.

Research on prevalence of tobacco smoking among population in Khabarovsk region revealed that 20-50% women who lived on the examined territory were familiar with it. Tobacco smoking occurred especially frequently among women living in rural districts (42.4%), and women employed at industrial enterprises (38.7%). Prevalence of tobacco smoking among female medical workers, students, and school students amounted to 18.9%, 23.3%, and 18.1% correspondingly [13].

Prevalence of behavioral risk factors, addiction to psychoactive substances in particular, is a most significant medical and social indicator that characterizes not only population health, but also a demographic potential of any state. In relation to that, giving up smoking allows to prevent deaths and certain diseases and, therefore, leads to longer life span of the population.

In 2008 Russia joined the WHOP Framework Convention on Tobacco Control aimed at fighting against tobacco smoking; the Convention includes such important activities in the sphere as protection of people from impacts by tobacco smoke; regulation of tobacco products structure; regulation of package and marking for tobacco products; warning people that tobacco is hazardous; prohibition of tobacco advertising; control over illegal trade in tobacco products; prohibition to sell tobacco to under-aged and by under-aged. As the country joined the Convention, it gave grounds for issuing a number of anti-tobacco regulatory and legislative acts.

Implementation of such activities as fighting against illegal trade in tobacco products and prohibition to sell tobacco products to under-aged and by under-aged is to a great extent determined by conscience and honesty of retail trade workers. But on the other hand, smoking behavior pursued by retail trade workers, with women and young people accounting for a big share of them, can be considered as "tobacco products advertising" especially for children and teenagers. Besides, if retail trade workers smoke, it causes profit losses to a company and deteriorates its image, in particular, due to unauthorized "smoke breaks" and absence of workers at their workplaces. Prevalence of smoking among retail trade workers hasn't been properly studied.

Given all that, **our research goal** was to study epidemiological aspects of tobacco smoking among workers employed by a retail network in Komsomolsk-na-Amure.

Data and methods. 204 women aged from 18 to 48 took part in our research; they were all employed at grocery stores that belonged to retail trade companies located in the city (Bitte, Amba). Average age amounted to 34.5. The respondents were divided into three age groups, 18-30 (the 1st group, average age being 23.8); 30-40 (the 2nd group, average age being 35.7); and 40-50 (the 3rd group, average age being 44.2).

We used tests and a questioning in our research. All the questions included into the questionnaire could be divided into four basic groups as per their subject matters: examining prevalence of smoking, examining respondent's awareness about medical and social consequences of tobacco smoking, examining prevalence of wrong beliefs (myths) about tobacco among respondents, determining attitudes towards anti-tobacco measures among respondents.

To examine what attitudes towards smoking prevailed among respondents, we applied a test developed by V.A. Khriptovich where they had to express to what extent they agreed

⁴Tobacco smoking epidemic in Russia: causes, consequences, ways to control: A report by The RF Civic Chamber [web-source]. – M., 2009. – URL: <https://www.oprf.ru/files/tabakokurenje.doc> (date of visit June 20, 2018).

or disagreed with each out of 40 statements according to a 5-score scale [14]. Assessment of the test results allows to determine whether a respondent has a negative, neutral, or positive attitude towards smoking.

Smoking respondents were offered the following tests: Fagerstrom Test for Nicotine Dependence, Horn test "Value your relations with cigarettes", "Smoking behavior type" and "Do you want to quit smoking?" (J. Lagrue) [15, 16]. Nicotine dependence as per Fagerstrom test is estimated as per a number of cigarettes a person smokes a day and peculiarities of smoking behavior in different situations.

Motivation to smoke was estimated as per Horn test; respondents were offered to express their agreement or disagreement with 18 statements according to a 5-score scale; each three of 18 statements correspond to a specific motivation type ("Stimulation", "Pleasure of the act", "Relaxation", "Anxiety support", "Absolute need" and "Acquired habit"). An extent to which a motivation type prevailed was determined as per a sum of scores given to it (from 0 to 15); up to 7 scores meant motivation was weak, 7-10 scores meant average motivation, and higher than 10 scores meant motivation was strong.

According to "Smoking behavior type" test developed by J. Lagrue, a type of a smoker and addiction are determined depending on quantity of cigarettes a person smokes a day. "Do you want to quit smoking?" test consists of 4 questions and allows to reveal how eager a person is to give up smoking.

Basic results and discussion. We examined the sampling and revealed that at present 60% female workers employed by selected companies were smokers. 32.5% out of 40% female workers who didn't smoke at the moment of the research had experienced tobacco smoking in their past, and it had been once/several times or casual smoking. However they had somehow lost any interest in it, had felt themselves bad, or had thought about adverse effects of smoking, and it had made them give it up. Only 7.5% respondents stated they had never tried tobacco in their life.

Women who were active smokers prevailed in each age group. Thus, they accounted for 58.3% in age group younger than 30; 52.6%, among women aged 30-40; and 77.8%, among those who were older than 40. In relation to that we can estimate prevalence of smoking among this particular sampling as being very high. We should note that the older age category made of women born in the late 60ties – early 70ties last century was involved into smoking to a greater extent than younger age group despite the fact that they were born in the Soviet Union times when smoking was not so widely spread as it is now.

We detected at what age the respondents had first tried smoking; the results are given in Table 1. As we can see from it, smokers aged 40-50 started smoking at older ages. Thus, almost each second respondent (42.8%) in the senior age group and only each tenth (10%) aged 30-40 first started smoking when they were 18 or older. We didn't detect any "late" starters among women younger than 30.

Table 1

Distribution of respondents depending on the age when they first tried smoking

Age of a first cigarette	Quantity, %		
	40–50	30–40	Younger than 30
11–12	-	-	28.6
13–14	28.6	70	57.1
16–17	28.6	20	14.3
18 and older	42.8	10	-

28.6% in the youngest age group, unlike the two others, first tried smoking at such an early age as 11-12. Therefore, we can state that the first cigarette tends to be taken at an earlier age in the examined sampling depending on an age group, and it goes in line with trends detected in the country [17].

Poor awareness about smoking-related hazards and wrong beliefs (myths) that make tobacco hazards not so serious, but smoking, on the contrary, more attractive are leading factors for greater prevalence of tobacco smoking.

Results on respondents' awareness about negative effects produced by tobacco are given

in Table 2. Their analysis revealed that both smoking respondents and those who don't have this bad habit are well aware about negative outcomes of smoking. Respondents fully understand that smoking can cause malignant neoplasms and cardiovascular diseases; it may be due to the fact that this knowledge has been actively promoted in mass media. Besides, graphic images on packs of cigarettes provide a smoker with detailed and visually understandable information about adverse outcomes of tobacco smoking.

However, the obtained results prove that respondents' awareness about smoking-related hazards is only superficial. Thus, most respondents don't think there is a direct link between chemical structure of components contained in tobacco smoke and carcinogenic risks. It is interesting to note that most smoking and non-smoking women are not aware of negative effects produced by tobacco on the reproductive system and on children's physical and mental development.

A comparative analysis of awareness about smoking-related hazards as per different age groups revealed that in general smoking women aged under 30 and older than 40 were better

aware than women aged 30-40; the latter had to grow up under the least favorable social conditions that existed in that most adverse period in the country development. Young women turn out to be the best informed in most cases. Thus, all the examined women who were younger than 30 knew that smoking caused lung and esophagus cancer; as for groups 2 and 3, about 80% in these groups were aware of this fact.

In some cases women aged 40-50 were better aware of some facts than their younger counterparts. In particular, 90% examined women aged 40-50 knew that smokers suffered from cardiac infarction more frequently against 75% among those younger than 30 and only 63.2% of those aged 30-40. We can assume that this better awareness among older women about a correlation between heart diseases and smoking is partly due to their life experience as cardiac infarctions and chronic heart diseases frequently occur exactly at this age (after 40).

There are a lot of myths that underestimate smoking-related hazards or create ideas on its potential benefits for health; we examined prevalence of such myths among our respondents and you can see the results in Table 3. Their analysis revealed that in general

Table 2

Awareness about smoking-related hazards among smoking and nonsmoking women

Negative consequences of smoking	Number, %	
	nonsmoking	smoking
Smoking causes lung and esophagus cancer	87.5	83.3
Smokers suffer from cardiac infarction more frequently	68.8	75
Smoking causes greater risk of diseases in eyes, hearing apparatus, teeth, gums, and blood	62.5	41.7
Smoking women run greater risk of cervical carcinoma and miscarriages	68.8	29.2
Smoking mothers often give birth to children with congenital malformations	68.8	50
Smoking men suffer from impotency and infertility more frequently	43.8	37.6
When a smoker takes a puff, about 1,200 hazardous substances are formed, including 43 carcinogens that can cause cancer	31.3	20.8
A smoker's brain always suffers from oxygen starvation	75	62.5
Smoking often causes bronchial asthma, bronchitis, lip, tongue, larynx, and trachea cancer	75	70.8
A smoker's heart wears more rapidly as it has to contract 12-15 thousand times more	56.3	66.7
Children born by smoking mothers often suffer from delayed development; they are worse in reading at the age of 7 and in comprehending texts and solving mathematical tasks at 10 than their peers	18.75	8.3

Table 3

Prevalence of myths about tobacco among the examined women

Statements	Number, %				
	Nonsmoking	Smoking	Younger than 30	30-40	40-50
Everybody smokes	18.8	12.5	28.6	10	-
All adults smoke	6.30	8.3	14.3	10	-
It is easy to quit	37.5	16.7	14.3	37	-
Smoking is hazardous only for those who smoke	-	12.5	14.3	20	-
Smoking helps to keep slim	-	4.2	-	10	-
Smoking helps to remove anxiety (stress)	37.5	70.8	28.6	74	71.4
Smoking is harmless	-	-	-	-	-
Smoking without puffs is harmless	-	-	-	-	-

such myths didn't tend to be widely spread among the examined respondents as opposed to teenagers who are more susceptible to wrong beliefs [18]. In particular, none of our respondents agree with the following statements: "smoking is harmless" and "smoking without puffs is harmless".

When we compared prevalence of myths about tobacco smoking among nonsmoking and smoking women, we revealed that some myths were widely spread only among smokers, including a wrong belief that smoking helps to keep fit and not put on weight. A myth that smoking helps to overcome stresses is the most widely spread exactly among smoking women as 70.8% smoking women agreed with that statement. And on the contrary, a myth about easiness of giving that bad habit up is the most widely spread among nonsmoking women.

Our analysis on prevalence of myths about tobacco smoking as per age groups confirmed that respondents aged 30-40 were the most poorly aware of its negative outcomes. Thus, each tenth respondent in this age group tended to underestimate hazards related to passive smoking, and 37% respondents were sure it was quite easy to give it up. 74% respondents aged 30-40 believed smoking could help to ease strain. It is interesting to note that smoking women aged 40-50 didn't believe in all the above mentioned myths except one about easing strain.

Our examination on respondents' attitudes towards smoking revealed that in general both smokers and non-smokers tended to have either

negative or neutral attitudes towards it. We didn't reveal any positive attitudes towards tobacco smoking among our respondents. However, all the nonsmoking respondents from the 1st and 3rd group had negative attitudes towards smoking, while at the same time only 78% respondents didn't approve of it in the 2nd group. A number of respondents among smokers in all the three groups who didn't have any negative attitude towards smoking amounted to 24 %, 42 %, and 33 % correspondingly. So, smokers tended to have more positive attitude towards smoking than non-smoking respondents. However, those non-smokers who are neutral to smoking can try it in this or that situation.

We determined a nicotine dependence degree in smoking women; it was revealed that nicotine dependence was absent in each second smoking woman younger than 30 and aged 30-40, and only in each fourth respondent aged 40-50 (Table 4). On the other hand, strong nicotine dependence was detected in each third smoking woman from the 1st group, in each seventh woman, from the 3rd group, and in each tenth woman from the 2nd group. A great number of women with strong nicotine dependence in the 1st group can be caused, in particular, by younger age at which they started smoking.

Deliverance from nicotine dependence is known to be a prevention medicine task that is just as important for reducing risks of cardiovascular diseases as correction of hyperlipidemia, hypercholesterolemia, arterial hypertension, or hypodynamia. The research re-

vealed that 43.5% smoking respondents with average and strong nicotine dependence could receive recommendations to take nicotine-replacing medications. Respondents with weak nicotine dependence can give up smoking without any drug therapy.

Table 4

Distribution of respondents as per nicotine dependence degree (%)

Nicotine dependence degree	Examined groups			Whole sampling
	Under 30	30–40	40–50	
Absence of nicotine dependence	50	50	28.6	43.5
Weak nicotine dependence	16.7	-	42.8	13.0
Average nicotine dependence	-	40	14.3	26.1
Strong nicotine dependence	33.3	10	14.3	17.4

It is impossible to overcome smoking behavior without knowing motives and reasons for smoking. We determined smoking behavior types among our smoking respondents and revealed that 20% respondents smoked only casually, mostly to support social contacts. 80% smokers took average or great number of cigarettes (from 5 to 20) a day and it could mean they had "behavioral" addiction.

Our determination of motives for smoking among our respondents revealed that, as we can see from the Figure, in general "Anxiety support" as a motive for smoking prevailed among the examined sampling; in other words women smoked as they tried to get some support in a complicated psychoemotional situation and to reduce emotional strain and stress. Average value for "Anxiety support" motive amounted to 10.83 and it indicated the motivation here was high.

The second rank place belonged to a group of motives called "Absolute need" (craving for a cigarette), the group value in scores was average that meant average motivation among respondents. This motive can be caused by physical addiction to tobacco. As a

result, when nicotine concentration in blood goes down, a person lights a cigarette and smokes in any situation, regardless of possible prohibitions to do it.

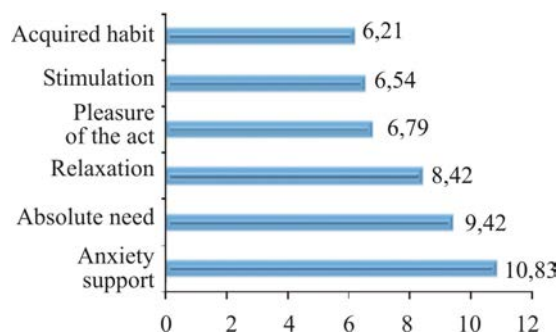


Figure. Hierarchy of respondents' motives for smoking (scores)

Motives from "Relaxation" group took the third rank place; they meant a person wished to get "additional pleasure" when relaxing and thought smoking would help in the matter. This motive was also average among respondents according to its scores.

Such motives as "Pleasure of the act" (a need to manipulate a cigarette), "Stimulation" (wish to feel a stimulating effect and remove fatigue), and "Acquired habit" (a habit, auto-smoking when a person smoked when doing his or her work) were less significant as their score values were lower than 7 (weak motivation).

Such motives as "Anxiety support" and "Relaxation" can be so strongly apparent due to influence exerted by certain occupational factors related to work in retail trade. Thus, intensity of consumer flows varies over a day and goods are also delivered unevenly, so workers have to undergo greater loads at "rush hours"; but then there is a break with no consumers or deliveries and they are idle for a period of time. Besides, workers employed at retail outlets have to work under extremely high neuro-psychological stress related to a necessity to serve customers who are very different as per their psychology, intelligence, and education.

We assessed a wish to quit smoking in our respondents and revealed that 58.3% had only a slight wish to do it, and 33.3% had an average one. Only 8.4% badly wanted to give up smoking.

As we all know, efforts taken by the state in order to limit tobacco smoking cannot be efficient without being understood and supported by the population, especially by retail trade workers. Our research revealed that non-smoking respondents supported anti-tobacco measures more actively than their smoking counterparts and it corresponded to the trends existing in the country [19].

Thus, 81.3% non-smokers and 70.8% smokers were in favor of total prohibition of tobacco advertising. Introduction of fines for smoking in public places was the least supported measure among the respondents although it was the most relevant one for passive smoking prevention. But still, 38% nonsmoking women and 50% smoking ones were against it. 50% non-smokers thought sales of cigarettes were to be completely forbidden; 25% non-smokers were in favor of strict prohibition to sell cigarettes to people younger than 21. Only 37.5% smokers were in favor of complete ban on sales of cigarettes, and 20.8%, partial (forbidden for those younger than 21).

Conclusions. Our research results allow us to conclude that:

– 60% of female workers employed in retail trade smoked at the moment when our research was performed; it could be estimated as high exposure to risk factors;

– younger age of introduction to smoking (at age of 11-12 over the last years) was confirmed and it is obvious that school girls are to be more actively informed about health risks and negative consequences related to smoking;

– awareness among smoking respondents about tobacco smoking outcomes and negative attitudes towards smoking unfortunately are not protective factors that make them quit; it means more efficient informational and educational prevention technologies are required;

– most smoking women think that smoking supports them in a complicated psychoemotional situation and helps to reduce emotional strain and stress. In relation to that, if we want to help them quit, it is necessary to improve their central nervous system and behavioral regulation with psychological, social, and medical technologies;

– workers employed in retail trade don't support all the anti-tobacco regulatory measures and it can make them violate the legislation in the sphere; so it is necessary to apply stricter requirements to workers and candidates concerning their addiction to psychoactive substances, including tobacco.

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