

## AWARENESS OF CANCER SCREENING AMONG GEORGIAN PRIMARY CARE PHYSICIANS

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Cancer is the second most common cause of death worldwide after cardiovascular diseases. Despite the development of new diagnostic and treatment tools cancer remains one of the leading challenges for the healthcare of developed and developing countries. According to the national centers for diseases control and prevention (NCDC) incidence of all cancer cases in 2018 was 258.5 per 100.000 in Georgia, an Eastern European country [1]. Segregated by gender breast cancer is most common malignant disease among females (29.3% of all cancers). Since 2006 Georgia is implementing the state cancer screening program (SCSP) covering breast cancer screening (females aged 40-70), cervical cancer screening (females aged 25-60) and colorectal cancer screening (individuals for both genders aged 50-70). Breast cancer screening is offered biannually. The program involves X-ray (mammogram) and breast ultrasound if needed. Cervical cancer screening using pap test is offered every 3 years. If necessary, the program also covers colposcopy and cervical biopsy to identify the high-grade changes. Colorectal cancer screening is offered every 2 years. Program covers fecal occult blood test (FOBT) and colonoscopy as a follow-up test when necessary [2].

State cancer screening program has low coverage in Georgia. In 2018 only 11.2% of eligible women were screened for cervical cancer and 8.6% had mammography. The coverage is even lower for colorectal cancer screening (1.5%) [3].

In 2019 NCDC launched an informational and educational campaign of cancer screening in two regions of Georgia – Adjara (seaside region) and Shida Kartli (Eastern Georgia) to increase the program's coverage. Along with the different educational activities the training courses for primary health care physicians (PHC) from three different regions of Georgia were conducted. The aim of the training was to provide updated information regarding the cancer screening program and to encourage health care workers (HCWs) to promote the cancer screening among their patients. Pre- and post-test was performed to evaluate baseline and follow-up knowledge regarding SCSP among HCWs. In many countries primary care workers have key role in the early detection of cancer. Accordingly, awareness of cancer screening is very important among them to increase the coverage of State screening programs. This study evaluates the baseline and post-training knowledge on breast, cervical and colorectal cancers and screening program among PHC.

**Material and methods.** The survey was conducted in September-October 2019 among PHC in the 3 different regions of Georgia. We collected data using survey instrument with 27 questions. Data were collected on knowledge of symptoms, risk-factors, and screening of breast, cervical and colorectal cancers. The survey tool included questions regarding details of SCSP including screening eligibility criteria and frequency, types of the screening and confirmatory examinations covered within the screening program. The study was approved by the Institutional Review Board (IRB) of Health Research Union. Data were entered and analyzed using statistical software SPSS version 23.

**Results and discussion.** A total of 129 primary HCWs were surveyed of which 55.0% (n=142) were from Adjara region, 24.8% (n=64) were from Shida Kartli and 20.2% (52) were from Imereti.

7.0% (n=9) of participants thought that cervical cancer was fourth most common type of cancers among females worldwide. Only 70.5% of surveyed individuals correctly stated that human papillomavirus (HPV) is not airborne. The age group of breast cancer screening was correctly reported by only 72.9% (n=94) of HCWs. Only half of respondents (44.9%) knew that breast cancer screening is offered every 2 years. 78.4% (n=98) of HCWs stated that women aged 25-60 were eligible for pap test. The further diagnostic examinations covered by cervical cancer screening was known by 85.8% (n=109) of surveyed individuals.

The baseline (pre-test) knowledge regarding high-risk types of HPV among HCWs was low. Only 41.3% (n=50) of respondents identified high-risk types of HPV correctly.

78.4% (n=98) of HCWs knew what types of examinations were done within colorectal cancer screening.

Analysis of pre and post test data showed the improvement of knowledge among HCWs. For example, the understanding of cervical cancer screening age group increased from 78.4% to 96.0% and this difference was statistically significant ( $p<0.01$ ).

Eligible age group for breast cancer screening was correctly reported by 72.9% of survey participants before trainings which significantly increased to 93.0% after trainings ( $p<0.001$ ).

Less than half of HCWs knew about high-risk types of HPV at the beginning of trainings and this was doubled after trainings (41.3% vs 81.0%,  $p<0.001$ ).

Before educational courses, only 61.1% of participants answered correctly the question regarding the age group of colorectal cancer screening which increased to 87.5% after trainings ( $p<0.001$ ).

Majority (92.2%) of PHC workers could name HPV transmission modes correctly after trainings compared to only 70.5% before the educational course ( $p<0.001$ ).

An assessment of knowledge and practice of cancer screening among PHC providers is important, as they represent the first level of community contact with health care. Accordingly, PHC workers play central role in both referrals for routine cancer screening as well as in early detection of clinical manifestations and specialized care referral. Low engagement of PHC workers in cancer screening can be one of the reasons of low coverage of State cancer screening program and low awareness of cancer screening can be one of the reasons of inadequate engagement. Several studies conducted in the developing countries with low coverage of cancer screening identified a lack of proper knowledge regarding screening programs among HCWs [4].

Our study revealed low awareness of cervical, breast and colorectal cancers and screening program. This finding is consistent with other studies in developing countries. A KAP survey carried out among female health care workers in Qatar revealed that majority (91.1%) were not aware of the eligibility criteria of cancer screening.

According to our study, only half of study participants knew that cervical cancer screening is offered every 3 years. This finding is similar to the results of the Indian study which showed that 36.6% of community healthcare workers had poor knowledge regarding cervical cancer screening [5].

Table.1 Knowledge regarding breast, cervical and colorectal cancer by the type of test

Characteristics	Pre test		Post test		P value
	N	%	N	%	
<b>Among females, cervical cancer is:</b>					
First most common type of cancers	24	18.6	8	6.2	<0.001
Second most common type of cancers	80	62.0	16	12.4	
Third most common type of cancers	16	12.4	34	26.4	
Fourth most common type of cancers	9	7.0	71	55.0	
<b>In Georgia, cervical cancer is:</b>					
First most common type of reproductive cancers	38	29.7	11	8.5	<0.001
Second most common type of reproductive cancers	69	53.9	35	27.1	
Third most common type of reproductive cancers	13	10.2	19	14.7	
Fourth most common type of reproductive cancers	8	6.3	64	49.6	
<b>HPV is not transmitted:</b>					
Answered correctly	91	70.5	118	92.2	<0.001
Answered wrongly	38	29.5	10	7.8	
<b>Breast cancer symptoms</b>					
Answered correctly	121	93.8	122	94.6	1.00
Answered wrongly	8	6.2	7	5.4	
<b>HPV high-risk types</b>					
6 and 11	31	25.6	16	12.7	<0.001
16 and 18	50	41.3	102	81.0	
43 and 44	31	25.6	5	4.0	
40 and 42	9	7.4	3	2.4	
<b>HPV high-risk types are not associated to:</b>					
Cervical cancer	3	2.4	5	4.0	0.52
Vulvar cancer	6	4.8	5	4.0	
Penile cancer	19	15.1	12	9.7	
Skin cancer	98	77.8	102	82.3	
<b>HPV low-risk types are not associated to:</b>					
Testicular cancer	34	27.4	14	11.4	<0.001
Cervical cancer	13	10.5	3	2.4	
Genital warts	57	46.0	104	84.6	
Uterine cancer	20	16.1	2	1.6	
<b>Risk of HPV mother to child transmission is:</b>					
0-2%	30	24.8	108	86.4	<0.001
1-3%	10	8.3	3	2.4	
2-4%	4	3.3	1	0.8	
Is not transmitted from mother to child	77	63.6	13	10.4	
<b>The aim of HPV antiviral treatment is:</b>					
Elimination of HPV	72	59.0	48	38.1	<0.001
Viral suppression	34	27.9	6	4.8	
HPV treatment is not available	16	13.1	72	57.1	
<b>Age of HPV vaccination by State Program</b>					
Answered correctly	114	89.8	121	95.3	0.15
Answered wrongly	13	10.2	6	4.7	
<b>Cause of colorectal cancer</b>					

Cause is unknown	83	66.9	97	78.9	0.13
Helicobacter pylori	19	15.3	15	12.2	
Intestinal viral infection	18	14.5	8	6.5	
Alcohol consumption	4	3.2	3	2.4	
<b>Mammography might not detect breast cancer in a case of</b>					
Dense breast	4	3.1	6	4.7	<0.05
Young age	9	7.0	6	4.7	
Fibro granular tissue	16	12.5	3	2.3	
All of above	99	77.3	114	88.4	
<b>Using mammography, changes in breast can be identified:</b>					
2 month after the onset of changes	72	56.3	18	14.1	<0.001
1 years after the onset of changes	41	32.0	16	12.5	
2 years after the onset of changes	12	9.4	94	73.4	
5 years after the onset of changes	3	2.3	0	0.0	

Table 2. Knowledge regarding state cancer screening program by the type of test

Characteristics	Pre test		Post test		P value
	N	%	N	%	
<b>State breast cancer screening age group</b>					
Identified correctly	94	72.9	120	93.0	<0.001
Identified wrongly	35	27.1	9	7.0	
<b>State breast cancer screening is offered:</b>					
Every 6 months	8	6.3	1	0.8	<0.001
Every year	33	26.0	24	18.8	
Every 2 years	57	44.9	88	68.8	
Every 3 years	29	22.8	15	11.7	
<b>Examinations covered by state breast cancer screening program</b>					
Identified correctly	116	91.3	125	97.7	
Identified wrongly	11	8.7	3	2.3	
<b>State cervical cancer screening age group is:</b>					
20-50	7	5.6	1	0.8	<0.01
20-65	8	6.1	2	1.6	
25-60	98	78.4	121	96.0	
None of above	12	9.6	2	1.6	
<b>State cervical cancer screening is offered:</b>					
Once a year	25	19.7	10	7.8	<0.01
Every 2 years	35	27.6	27	21.1	
Every 3 years	64	50.4	91	71.1	
Every 4 years	3	2.4	0	0.0	
<b>State cervical cancer screening covers:</b>					
Answered correctly	109	85.8	122	95.3	<0.05
Answered wrongly	18	14.2	6	4.7	
<b>State colorectal cancer screening age group is:</b>					

30-50	6	4.8	9	7.0	<0.001
40-60	36	28.6	7	5.5	
50-70	77	61.1	112	87.5	
None of above	7	5.6	0	0.0	
<b>State cervical cancer screening is offered:</b>					
Every 2 years	63	50.4	91	72.8	<0.001
Every 3 years	36	28.8	33	26.4	
Every 5 years	23	18.4	0	0.0	
Every 6 years	3	2.4	1	0.8	
<b>Colorectal cancer risk-factor in not:</b>					
Age	26	20.6	11	8.5	<0.001
Unhealthy diet	6	4.8	4	3.1	
Multiple sexual partners	61	48.4	100	77.5	
Obesity	33	26.2	14	10.9	
<b>State colorectal cancer covers:</b>					
Occult bleeding test	12	9.6	11	8.6	<0.01
Colonoscopy if needed	11	8.8	2	1.6	
None of above	4	3.2	0	0.0	
All of above	98	78.4	115	89.8	

The post-test after the training showed significant improvement in knowledge among trained HCWs. Follow-up knowledge and practice surveys are needed to understand the long-term impact of training on the rate of referrals for cancer screening by PHC providers.

#### REFERENCES

1. Population-based cancer registry. Results of the 4-years implementation, Georgia. 2015-2018. <https://test.ncdc.ge/Handlers/GetFile.ashx?ID=1f20368c-fbf4-40f1-8fd3-6fa2ad88a11e>
2. დაავადებათა ადრეული გამოვლენა და სკრინინგი. <https://test.ncdc.ge/Pages/User/LetterContent.aspx?ID=7a9f4d37-d6a9-4ea7-b3d5-292113b3456f>
3. ძუძუს, საშვილოსნოს ყელის და მსხვილი ნაწლავის კიბოს სკრინინგის პროგრამა. <https://test.ncdc.ge/Handlers/GetFile.ashx?ID=01b47a1e-6814-4f55-9f18-1b9b7c79efb3>
4. Knowledge , Attitudes and Practices regarding Cervical Cancer Screening among Female Health Care Workers in Primary Healthcare in Qatar. 5. [https://www.researchgate.net/publication/308414128\\_Knowledge\\_Attitudes\\_and\\_Practices\\_regarding\\_Cervical\\_Cancer\\_Screening\\_among\\_Female\\_Health\\_Care\\_Workers\\_in\\_Primary\\_Healthcare\\_in\\_Qatar](https://www.researchgate.net/publication/308414128_Knowledge_Attitudes_and_Practices_regarding_Cervical_Cancer_Screening_among_Female_Health_Care_Workers_in_Primary_Healthcare_in_Qatar)
5. Khanna D, Khargekar N, Budukh A. Knowledge, attitude, and practice about cervical cancer and its screening among community healthcare workers of Varanasi district, Uttar Pradesh, India. // J Family Med Prim Care. 2019;8(5):1715-1719. doi: 10.4103/jfmnc.jfmnc\_143\_199

#### SUMMARY

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Despite the development of new diagnostic and treatment tools, cancer remains one of the leading public health challenges of developed and developing countries. According to the National Center for Disease control and Public Health (NCDC), incidence of all cancer cases in 2018 was 258.6 per 100.000 in Georgia. However, the national cancer screening program (available since 2006) has a low participation rate. In 2018, only 11.2% of eligible women were screened for cervical cancer and 8.6% had a mammogram. The coverage is even lower for colorectal cancer screening (1.5%).

In 2019, NCDC launched an awareness campaign for cancer screening aiming to inform citizens about the importance of cancer screening and to provide updated information to primary care physicians to promote the cancer screening among their patients.

Primary care workers (PCW) from three regions of Georgia were surveyed to assess their awareness regarding cancer and the cancer screening program before and after the educational courses. Data were collected using a self-administered questionnaire with 27 questions. The statistical software package, SPSS version 23, was used for data processing and analyses.

A total of 129 primary care workers were enrolled, of whom 55.1% did not know that breast cancer screening is offered every two years by the national screening program. Only 61.1% correctly identified the eligible age groups for colorectal cancer screening. Almost half of PCWs (46.0%) did not know that low-risk HPV strains are associated with genital warts.

Low engagement of PHC workers in cancer screening may explain the low participation rate in the state cancer screening program. Even though baseline knowledge was significantly improved after training courses, follow-up knowledge and practice surveys are needed to understand the long-term impact of training on the rate of referrals for cancer screening by PHC providers.

**Keywords:** cancer screening, PCW, Awareness campaign.

## РЕЗЮМЕ

### ОСВЕДОМЛЕННОСТЬ О СКРИНИНГЕ РАКА СРЕДИ ГРУЗИНСКИХ ВРАЧЕЙ ПЕРВИЧНОЙ ПОМОЩИ

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Несмотря на разработку современных средств диагностики и лечения, рак остается одной из основных проблем общественного здравоохранения в развитых и развивающихся странах. По данным Национального центра контроля заболеваний и общественного здравоохранения (NCDC), заболеваемость раком в 2018 году составила 258,6 на 100000 нас. в Грузии. Государственная программа скрининга рака, действующая с 2006 г., имеет низкий охват. В 2018 году только 11,2% женщин прошли скрининг на рак шейки матки, а 8,6% - маммографию. Еще ниже охват скринингом на колоректальный рак (1,5%). В 2019 году NCDC запустил информационную и образовательную кампанию по скринингу рака, направленную на повышение мотивации населения к скринингу для предоставления обновленной информации врачам первичной медико-санитарной помощи с целью продвижения скрининга рака среди пациентов. Работники первичной медико-санитарной помощи (PCW) из трех регионов Грузии опрошены для оценки осведомленности о раке и программе скрининга рака до и после учебных курсов. Данные собраны с помощью самостоятельно заполняемой анкеты, содержащей 27 вопросов. Для обработки и анализа данных использовалось статистическое программное обеспечение SPSS v 23. Всего опрошено 129 работников первичного звена. 55,1% PCW не осведомлены, что в рамках государственной программы скрининг рака груди предлагается каждые два года, и только 61,1% респондентов правильно назвали подходящие возрастные группы для скрининга на колоректальный рак. Почти половина PCW (46,0%) не знали, что типы вируса папилломы человека низкого риска связаны с остроконечными кондиломами. Низкая вовлеченность работников PCW в скрининг рака может быть одной из причин низкого охвата скрининга рака государственной программой. Несмотря на значительное улучшение базовых знаний после учебных курсов, необходимо проведение

дополнительных практических исследований для оценки эффективности обучения и обеспечения своевременного направления врачами PCW пациентов на скрининговую программу.

## რეზიუმე

ცოდნის დონე კიბოს სკრინინგის შესახებ პირველადი ჯანდაცვის ექიმებში საქართველოში

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მიუხედავად დიაგნოსტიკის და მკურნალობის მეთოდების განვითარებისა კიბო კვლავ რჩება საზოგადოებრივი ჯანდაცვის ერთ-ერთ მთავარ გამოწვევად განვითარებული და განვითარებადი ქვეყნებისთვის. საქართველოში დაავადებათა კონტროლის და საზოგადოებრივი ჯანმრთელობის ეროვნული ცენტრის (NCDC) მონაცემებით, 2018 წელს ყველა სახის კიბოს ახალ შემთხვევათა რიცხვმა 100 000 მოსახლეზე შეადგინა 258.6. კიბოს სკრინინგის სახელმწიფო პროგრამას, რომელიც ხელმისაწვდომია 2006 წლიდან, დაბალი მოცვა აქვს. 2018 წლის მონაცემებით, საშვილოსნოს ყელის კიბოს სკრინინგი ჩაუტარდა შესაბამისი ასაკობრივი ჯგუფის წარმომადგენელ ქალთა მხოლოდ 11.2%-ს, ხოლო ძუძუს კიბოს სკრინინგი - 8.6%-ს. კიდევ უფრო დაბალი იყო მსხვილი ნაწლავის კიბოს სკრინინგის მოცვა, რომელმაც შესაბამისი ასაკობრივი ჯგუფის მხოლოდ 1.5% შეადგინა. 2019 წელს, NCDC-მ განახორციელა საინფორმაციო და საგანმანათლებლო პროგრამა, რომელიც მიზნად ისახავდა მოსახლეობის ცნობიერების ამაღლებას კიბოს სკრინინგის სახელმწიფო პროგრამის შესახებ და პირველადი ჯანდაცვის (პჯდ) ექიმებისთვის განახლებული ინფორმაციის მიწოდებას მათ პაციენტებში სკრინინგის პროგრამის პრომოციისათვის. კიბოს სკრინინგის სახელმწიფო პროგრამის შესახებ პჯდ ექიმების ცოდნის დონის შესაფასებლად ტრენინგ კურსების დაწყებამდე და დასრულების შემდეგ ჩატარდა გამოკითხვები. ტრენინგის ბენეფიციარები იყვნენ საქართველოს სამ სხვადასხვა რეგიონში მოფუნქციონირე პირველადი ჯანდაცვის ექიმები. მონაცემთა შეგროვება მოხდა თვით-ადმინისტრირებადი კითხვარის მეშვეობით, რომელიც მოიცავდა 27 კითხვას. მონაცემთა დამუშავებისა და ანალიზისთვის გამოყენებული იყო სტატისტიკური პროგრამა SPSS V.23.0. გამოკითხვაში მონაწილეობა მიიღო 129 პჯდ ექიმმა. გამოკითხულთა 55.1%-მა არ იცოდა, რომ სახელმწიფო პროგრამის ფარგლებში ქალებს ძუძუს კიბოს სკრინინგის ჩატარება შეუძლიათ ყოველ ორ წელიწადში ერთხელ და მხოლოდ 61.1%-მა სწორად დაასახელა მსხვილი ნაწლავის კიბოს სკრინინგის ასაკობრივი ჯგუფი. პჯდ ექიმთა 46.0% არ იცოდა, რომ ადამიანის პაპილომა ვირუსის დაბალი რისკის ტიპები გენიტალურ მექაჩებთან არიან ასოცირებული. კიბოს სკრინინგის პროგრამაში პჯდ ექიმთა დაბალი ჩართულობა

შესაძლებელია იყოს პროგრამის მოცვის დაბალი მანქანების ერთ-ერთი მიზეზი. ტრეინინგ კურსების შედეგად არსებული ცოდნა მნიშვნელოვნად გაუმჯობესდა. აუცილებელია შემდგომი კვლევების ჩა-

ტარება საგანმანათლებლო კურსების ეფექტურობის შეფასებისა და პუბლიკაციების მიერ პაციენტთა სკრინინგის პროგრამაში დროულად ჩართვის უზრუნველყოფის მიზნით.

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## KNOWLEDGE OF GEORGIAN POPULATION TOWARDS AIR POLLUTION AND HEALTH EFFECTS OF LEAD CONTAMINATION

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Environmental pollution is one of the major problems for the world, which poses as a great threat to human health and the environment. One of the main causes of polluted environment is air pollution, which includes two types: ambient air pollution and household air pollution. Main sources of air pollution are: affected vehicles, power generation, burning of fuel and waste in household conditions, agriculture/waste incineration and various industrial activities.

According to the World Health Organization (WHO), air pollution kills an estimated seven million people worldwide every year. High rates of air pollution are most often recorded in low and middle-income countries, around 91% of the world's population live in places where air quality levels exceed WHO limits [12].

Polluted air increases the risk of lung cancer and lower respiratory tract, brain and cardiovascular diseases. Lung cancer accounts for about 26% of all cancers and is ranked as the deadliest cancer among males and the second deadliest cancer among females. Ambient air pollutants are associated with lung cancer incidence and mortality [3,6,11]. Ecological study, which was conducted in Los Angeles (LA), has related air pollution exposures to survival in patients diagnosed with lung cancer [13].

Polluted air creates health risk for people with cardiovascular diseases. Clinical and epidemiological studies demonstrate that short- and long-term exposure to air pollution increases mortality due to respiratory and cardiovascular diseases [2,9].

The main source of air pollution in Georgia is transport emissions. People who are often in motion near the road, especially during rush hours, are at risk of poor health outcomes.

Since January 26, 2019, the website [www.air.gov.ge](http://www.air.gov.ge) was launched and since then, any willing person can track air pollution indicators online throughout the country. Via website one can check the main air pollutants according to their level of pollution.

In autumn in Georgia, people often burn fallen leaves and the produced smoke has severe health effects. Smoke of the burning leaves contain small solid particles and hydrocarbons, including toxic irritants, potential carcinogens such as benzo (a) pyren, as well as a substance common in the smoke of the leaves - carbon dioxide. Inhalation of solid particles may cause respiratory diseases, reduce the amount of inhaled air and affects the ability for the lungs to use this air.

One of the main pollutants in the environment is also a heavy metal lead, which in large quantities can damage our health. Lead poisoning is especially dangerous in children and pregnant

women. Lead could be found anywhere in our environment - in the air, on the ground, in the water and also in our homes [1].

Lead and lead-containing substances are used in products which are used in our daily lives. These may be paints, items or walls painted with lead-containing paints, ceramic items, stained glass, pipes and plumbing materials, cosmetics, batteries and military equipment. Children may also come in contact with lead-contaminated toys. Lead poisoning in children may cause hyperactivity, growth retardation and developmental problems, mental retardation, behavioral disorders, reduced intelligence quotient (IQ) and anemia [10].

Lead poisoning is one of the major public health topics in Georgia. For the past several years, the country has launched various laboratory methods to determine level of lead in blood, while a large part of the population has no information about it.

**Material and methods.** The goal of this study was to assess the level of knowledge about air pollution and the health effects of lead in the population of Georgia.

In Georgia in 2019, within the framework of the project "Protect Environment" conducted by the National Center for Disease Control and Public Health and Health Research Union, the online survey was carried out using a Facebook advertisement, which included the title, body text, the banner and the link to the questionnaire. The target population was the whole country and the language used was Georgian. We collected information on knowledge about health problems caused by polluted air, diverse environmental pollutants (smoke of burning leaves, cigarette butts and smoke, effects of lead, etc.), effectiveness of the face mask against polluted air and awareness of the informational website [www.air.gov.ge](http://www.air.gov.ge).

**Statistical Analyses:** Data entry, management and analyses were conducted using the statistical package SPSS v.22.0 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY). Descriptive statistics were computed to describe the level of knowledge of the respondents about environmental pollution.

**Results and discussion.** The study was conducted in October 2019. It lasted for 3 days and 349 people participated in the survey. Major findings of our study were the following: most of the respondents (90.3%) correctly answered the question related to air pollution causing different types of diseases. 4.6% of surveyed individuals think that air pollution can cause respiratory diseases, 4.0% – cancer, 1.1% - cardiovascular diseases; while 90.3% of respondents defined correctly that air pollution can cause all of the above-mentioned health problems.