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PREVALENCE OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE RISK FACTORS AMONG THE ADULT POPULATION IN ZHAMBYL REGION IN 2021: A CROSS-SECTIONAL STUDY

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Abstract

Introduction. Data from the World Health Organization show that chronic obstructive pulmonary disease (COPD) has become an important contributor to the global burden of non-communicable diseases [5]. COPD affects 12% of the global population or 300 million people and it is the 12th most prevalent cause of years of life lost globally and the fourth leading cause of death [30]. An estimated 1.4 million individuals in Kazakhstan may be affected by COPD. Tobacco smoking, occupational and environmental exposures including workplace dusts and chemicals, and smoke from home cooking and heating fuels are the main risk factors for COPD [6, 10, 23].

Aim. To study the prevalence of risk factors and symptoms of COPD among the adult population of Zhambyl region.

Materials and Methods. The descriptive cross-sectional study was conducted in the Zhambyl Region, the southern of the Kazakhstan. The study included people aged 18-69 years who were willing to give informed consent. The type of data distribution was tested using the Kolmogorov–Smirnov test. Because the data distribution was normal, descriptive statistics were generated by computing the mean and the standard deviation (SD). Qualitative data are presented in absolute numbers and percentages. Pearson's chi-square (χ^2) test was used to evaluate differences in frequencies. The critical value was considered significant at $p < 0.05$.

Results. The level of current tobacco use among survey participants was 10.1%. The proportion of male smokers was 38.2%, female smokers 3.2%, and those using non-smoking tobacco products 3.4%. A total of 89.7% of men and 47.8% of women smoked daily. Of the respondents, 20% reported more frequent coughs and 27.5% more frequent colds. In addition, 20% of respondents had a history of chronic bronchitis and 14% had a history of pneumonia.

Conclusion. We found a significant prevalence of respiratory symptoms for COPD such as coughing, shortness of breath, and chronic bronchitis. Tobacco smoking emerged as the most important risk factor, with a significant number of respondents reporting current smoking habits and exposure to passive smoking. Reducing the prevalence of COPD, a silent disease that affects public health, should be a national priority.

Keywords: chronic obstructive pulmonary disease, Kazakhstan, risk factors, smoking.

Резюме

РАСПРОСТРАНЕННОСТЬ ФАКТОРОВ РИСКА ХРОНИЧЕСКОЙ ОБСТРУКТИВНОЙ БОЛЕЗНИ ЛЕГКИХ СРЕДИ ВЗРОСЛОГО НАСЕЛЕНИЯ ЖАМБЫЛСКОЙ ОБЛАСТИ В 2021 ГОДУ: ПОПЕРЕЧНОЕ ИССЛЕДОВАНИЕ

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Введение. Данные Всемирной организации здравоохранения показывают, что хроническая обструктивная болезнь легких (ХОБЛ) стала важным фактором глобального бремени неинфекционных заболеваний [5]. ХОБЛ поражает 12% мирового населения, или 300 миллионов человек, и является 12-й по распространенности причиной потери лет жизни во всем мире и четвертой по значимости причиной смерти [30]. По оценкам, 1,4 миллиона человек в Казахстане могут страдать от ХОБЛ. Курение табака, профессиональное воздействие и воздействие окружающей среды, включая пыль и химические вещества на рабочем месте, а также дым от домашнего приготовления пищи и топлива для отопления являются основными факторами риска ХОБЛ [6, 10, 23].

Цель исследования. Изучить распространенность факторов риска и симптомов ХОБЛ среди взрослого населения Жамбылской области.

Материалы и методы исследования. Описательное перекрестное исследование проводилось в Жамбылской области, на юге Казахстана. В исследовании приняли участие люди в возрасте от 18 до 69 лет и готовые дать информированное согласие. Тип распределения данных проверялся с помощью теста Колмогорова-Смирнова. Поскольку распределение данных было нормальным, описательная статистика была получена путем вычисления среднего значения и стандартного отклонения (SD). Качественные данные представлены в абсолютных числах и процентах. Для оценки различий в частотах использовался тест хи-квадрат Пирсона (χ^2). Критическое значение считалось значимым при $p < 0,05$.

Результаты. Уровень текущего потребления табака среди участников опроса составил 10,1%. Доля курящих мужчин составила 38,2%, курящих женщин - 3,2%, употребляющих некурительные табачные изделия - 3,4%. В общей сложности 89,7 % мужчин и 47,8 % женщин курили ежедневно. Среди респондентов 20 % отметили частый кашель и 27,5% более частые простудные заболевания. Также, у 20 % респондентов в анамнезе был хронический бронхит, а у 14% - пневмония.

Заключение. Мы обнаружили значительную распространенность респираторных симптомов, связанных с ХОБЛ, таких как кашель, одышка и хронический бронхит. Курение табака является наиболее важным фактором риска, при этом значительное число респондентов сообщили о существующих привычках к курению и подверженности пассивному курению. Профилактика основных факторов риска, связанных с развитием ХОБЛ, должна стать национальным приоритетом, чтобы снизить распространенность этого тихого заболевания, представляющего собой угрозу общественному здоровью.

Ключевые слова: хроническая обструктивная болезнь легких, Казахстан, факторы риска, курение.

Түйіндеме

ЖАМБЫЛ ОБЛЫСЫНЫҢ ЕРЕСЕК ТҮРҒЫНДАРЫ АРАСЫНДА СОЗЫЛМАЛЫ ОБСТРУКТИВТІ ӨКПЕ АУРУЛАРЫНЫҢ ҚАУІП ФАКТОРЛАРЫНЫҢ ТАРАЛУЫ: КӨЛДЕНЕҢ ЗЕРТТЕУ

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Кіріспе. Дүниежүзілік денсаулық сақтау ұйымының деректері бойынша өкпенің созылмалы обструктивті ауруы (ӨСОА) жұқпалы емес аурулардың жаһандық ауыртпалығына маңызды үлес қосады [5]. ӨСОА әлем халқының 12%-ына немесе 300 миллион адамға әсер етеді және дүние жүзінде жоғалған өмірдің 12-ші себебі және өлімнің төртінші негізгі себебі [30]. Қазақстанда 1,4 миллион адам ӨСОА-дан зардап шегуі мүмкін деген болжам бар. Темекі шегу, кәсіптік және қоршаған орта әсерлері, соның ішінде жұмыс орнындағы шаң мен химиялық заттар, сондай-ақ үйде пісіру мен жылыту отынының түгіндері ӨСОА-ның негізгі қауіп факторлары болып табылады [6, 10, 23].

Зерттеу мақсаты. Жамбыл облысының ересек тұрғындары арасында ӨСОА қауіп факторлары мен симптомдарының таралуын зерттеу.

Зерттеу материалдары мен әдістері. Оңтүстік Қазақстандағы Жамбыл облысында сипаттамалық қима зерттеу жүргізілді. Зерттеуге 18 бен 69 жас аралығындағы және ақпараттандырылған келісім беруге дайын адамдар қатысты. Деректерді тарату түрі Колмогоров-Смирнов тесті арқылы тексерілді. Деректердің таралуы қалыпты болғандықтан, сипаттамалық статистика орташа және стандартты ауытқуды (SD) есептеу арқылы алынды. Сапалық деректер абсолютті сандармен және пайыздармен берілген. Жіліктердегі айырмашылықтарды бағалау үшін Пирсон хи-квадрат сынағы (χ^2) қолданылды. Критикалық мән $p < 0,05$ кезінде маңызды деп саналды.

Нәтижелері. Сауалнамаға қатысушылар арасында темекіні ағымдағы тұтыну деңгейі 10,1% құрады. Шылым шегетін ерлердің үлесі 38,2%, әйелдердің үлесі 3,2% және түтінсіз темекі бұйымдары – 3,4% құрады. Темекіні күнделікті ерлердің 89,7% және әйелдердің 47,8% шегетіні анықталды. Респонденттердің 20% жиі соңғы кездері жиі жөтелетінін және 27,5% суық тиюдің жиі болатынын атап өтті. Сондай-ақ, респонденттердің 20%-ында созылмалы бронхит, 14%-ында пневмония болған.

Қорытынды. Жөтел, еңтігу және созылмалы бронхит сияқты ХОБЛ-мен байланысты респираторлық симптомдардың едәуір таралғанын анықтадық. Темекі шегу ең маңызды қауіп-қатер факторы болып табылады, бұл ретте респонденттердің едәуір бөлігі темекі шегу әдеттері мен пассивті темекі шегуге бейімділігі туралы хабарлады. ӨСОА дамуымен байланысты негізгі қауіп факторларының алдын алу қоғамдық денсаулыққа қауіп төндіретін осы үнсіз аурудың таралуын азайту үшін ұлттық басымдыққа айналуы тиіс.

Түйінді сөздер: өкпенің созылмалы обструктивті ауруы, Қазақстан, қауіп факторлары, темекі шегу.

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Introduction

One of the major causes of noncommunicable diseases is COPD, which affects the health and quality of life of people around the world [5].

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) describes COPD for 2023 as “a heterogeneous lung condition characterized by chronic respiratory symptoms (dyspnea, cough, expectoration and/or exacerbations) due to abnormalities of the airways (bronchitis, bronchiolitis) and/or alveoli (emphysema) that cause persistent, often progressive, airflow obstruction” [2].

It represents a real challenge for global health systems, with significant socioeconomic and health consequences [14]. According to the WHO, COPD is considered among the top 10 global causes of death [3].

Chronic obstructive pulmonary disease is a serious health problem and one of the world's leading predictors of death and long-term disability. Scientists and healthcare professionals are dedicated to understanding the causes of the disease, finding effective treatments, and optimizing the use of medical funds to improve patient outcomes [15].

COPD affects 12% of the global population or 300 million people and it is the 12th most prevalent cause of years of life lost globally and the 4th leading cause of death [30]. COPD is an important cause of mortality. Between 2009 and 2019, the mortality rate of COPD increased by 35.4% [3]. Due to its high mortality rate and significant impact on public health, chronic obstructive pulmonary disease is expected to become the third most common cause of death in the world by the year 2030, according to WHO projections [17]. Mortality from COPD, however, is often underestimated due to misclassification and frequent comorbidity.

According to World Health Organization surveys conducted in other countries in the European region, approximately 1.4 million people in Kazakhstan suffer from COPD [1].

COPD is influenced by many factors. Primary risk factors include workplace and environmental dust and chemical exposures, tobacco smoking, and smoke from household stoves and heaters [6, 10, 23]. The progression of COPD may also be influenced by factors such as older age, poor living conditions, and chronic infections that affect the lungs, especially tuberculosis. These conditions can contribute to the development and worsening of COPD over time [23]. Previous studies have confirmed that exposure to air pollution and biomass smoke is a significant risk factor for COPD [11,16]. Emissions from biomass burning are most common among women and children [8] living in homes with poor ventilation in developing countries, who use biomass fuels like firewood, animal dung and agricultural waste for cooking and heating [4]. Eight of these studies found

that workers exposed to dust were more likely to develop COPD than those not exposed [20,22,26]. Smoke from cigarettes can harm the respiratory mucosa through either active or passive inhalation, which can result in long-term respiratory tract inflammation [21]. Patients with COPD experience significant physical and psychological stress due to reduced functional capacity and life expectancy. They also suffer from respiratory symptoms and comorbidities like cardiovascular disease (CVD), pneumonia, and increased mortality from SARS-CoV-2. [19].

The main symptoms of COPD are shortness of breath, coughing and increased sputum production, but many people also experience wheezing and chest tightness, especially on exertion [12]. The current Global Initiative for Chronic Obstructive Lung Disease publication recognizes the significance of symptoms in COPD and suggests assessing symptom burden (mostly dyspnea) and exacerbation history independently from airflow limitation [18]. COPD is also called emphysema or chronic bronchitis. Emphysema is when tiny lung sacs that hold air are destroyed, while chronic bronchitis is a cough with phlegm due to airway inflammation. COPD and asthma have similar symptoms, like coughing, wheezing, and difficulty breathing, and some people may have both conditions [7]. Therefore, the main objective of this study was to investigate the prevalence of risk factors and symptoms related to COPD among adults in Zhambyl Region.

Materials and Methods*Study population*

The descriptive cross-sectional study was conducted in the Zhambyl Region, the southern of the Kazakhstan. *Inclusion criteria* were voluntary participation in the study and age between 18 and 69 years. *Exclusion criteria* were refusal to participate in the study, the population permanently residing in residential institutions, including social institutions, hospitals and other health care facilities, organizations run by religious communities, correctional institutions and prisons, and persons without a permanent residence.

Ethical considerations

Approval was obtained from the Research Ethics Committee of “KSPH” Kazakhstan Medical University, Almaty, Kazakhstan. An anonymous, self-explanatory questionnaire was developed to assess COPD risk factors. The questionnaire was prepared in both Kazakh and Russian languages. Voluntary informed consent was attached to the questionnaire and participants approved it before completing the questionnaire. The questionnaire was categorized into the following parts: [1] Demographic data and general characteristics were obtained. [2] Questions about COPD risk factors.

Statistics.

The dataset was imported into a Microsoft Excel spreadsheet and then transferred to SPSS, a software designed for Windows. To check for normality, the Kolmogorov-Smirnov test was used, a commonly used research tool. If the data followed a normal distribution, descriptive statistics were calculated focusing on the mean value. Any differences between the means were tested using the Student's t-test, which compares two groups' means. Qualitative data was presented in numbers and percentages to illustrate the categories under study. A Pearson's χ^2 test was used to compare the differences between qualitative data. Results were considered statistically significant if the p-value was below 0.05.

Results

A total of 551 respondents took part in the study, with data from 385 analyzed and 166 systems missing. Table 1 shows the general characteristics of the population studied. Participants included 254 (66.0%) from Taraz city, 94 (24.4%) from Karatau village, and 37 (9.6%) from Sarykemer village, $\chi^2= 197.242$, $p<0.001$. About 80% of the respondents were female (n=309). There was no significant statistical difference in the mean age of 33.961 ± 14 years for men and 36.246 ± 13 years for women. Compared to men, women were more likely to be single (not married, divorced or widowed). Among the respondents, the fuels used were: natural gas - 346 (89.9%), coal - 22 (5.7%), dry dung - 15 (3.9%), and firewood - 2 (0.5%), with $\chi^2= 93.171$ and $p=0.366$.

Table 1.

General characteristics of study participants, n = 385.

Variables	Gender						Test of difference			
	Male		Female		Total		χ^2	p-value		
	n	%	n	%	n	%				
1	2	3	4	5	6	7	8	9	10	
Age, years, mean and standard deviation*			34 ± 13		36 ± 13		36 ± 13	1,354	0,176	
Education, years, mean and standard deviation *			14	3	14	3	14	3	5,04	0,025
Education level	Higher		35	46.1	91	29.4	126	32.7	9,087	0,028
	Completed secondary education (11 grades)		35	46.1	198	64.1	233	60.5		
	Completed secondary education (9 grades)		3	3.9	13	4.2	16	4.2		
	Master/Doctoral		3	3.9	7	2.3	10	2.6		
Ethnicity	Kazakh		71	93.4	263	85.1	334	86.8	11,285	0,046
	Russian		1	1.3	17	5.5	18	4.7		
	Kyrgyz		2	2.6	1	.3	3	.8		
	Uzbek		1	1.3	3	1.0	4	1.0		
	Turkish				9	2.9	9	2.3		
	Other		1	1.3	16	5.2	17	4.4		
Family status	Married		52	68.4	193	62.5	245	63.6	5,330	0,149
	Single, not married		21	27.6	77	24.9	98	25.5		
	Divorced		3	3.9	26	8.4	29	7.5		
	Widower/widow				13	4.2	13	3.4		
Employment status	Unemployed		7	9.2	19	6.1	26	6.8	50,164	<0,001
	State employee		26	34.2	108	35.0	134	34.8		
	Budget employee		14	18.4	90	29.1	104	27.0		
	Entrepreneur		8	10.5	5	1.6	13	3.4		
	Pensioner		3	3.9	20	6.5	23	6.0		
	Housewife				23	7.4	23	6.0		
	Student		7	9.2	37	12.0	44	11.4		
	Disabled				2	.6	2	.5		
	Agricultural worker		5	6.6	3	1.0	8	2.1		
	Professional athlete		1	1.3			1	.3		
	Employee of harmful and hazardous production		3	3.9	1	.3	4	1.0		
	Employee of heavy physical labor		2	2.6	1	.3	3	.8		
Children	no		26	34.2	86	27.8	112	29.1	4,196	0,241
	one		12	15.8	40	12.9	52	13.5		
	two		16	21.1	54	17.5	70	18.2		
	Three or more		22	28.9	129	41.7	151	39.2		
Amount of average monthly income per family member	Up to 42,5000 ₸		18	23.7	112	36.2	130	33.8	26,487	<0,001
	42,500-100,000 ₸		18	23.7	114	36.9	132	34.3		
	100,000-150,000 ₸		16	21.1	50	16.2	66	17.1		
	150,000-200,000 ₸		15	19.7	16	5.2	31	8.1		
	200 ₸ and more		9	11.8	17	5.5	26	6.8		
Number of people living in the family			5	2	5	2	5	2	1,302	0,194

Continuation of Table 1.

1	2	3	4	5	6	7	8	9	10
As fuel?	Natural gas	65	85.5	281	90.9	346	89.9	3,171	0,366
	Coal	7	9.2	15	4.9	22	5.7		
	Dry dung	4	5.3	11	3.6	15	3.9		
	Firewood			2	.6	2	.5		

* - T-test

For the variable "What category do you consider yourself to be with regard to smoking?", 39 (10.1%) answered that they smoke, of which 29 (38.2%) were men and 10 (3.2%) were women, use non-smoking tobacco products 13 (3.4%), $\chi^2= 93.029$ $p<0.001$. Among the respondents, 26 (34.2%) men and 11 (3.6%) women reported daily tobacco use, with a significant χ^2 value of 65.968 and $p < 0.001$. According to the survey, the "average number" of cigarettes consumed by individuals per

day was 13, with a range from 0 to 24. Men, on average, smoked 9 cigarettes per day (max 24), while women, smoked 1 cigarette per day (max 20). Regarding passive smoking, 46 out of 385 respondents (11.9%) reported being passive smokers, including 19 men (25.0%) and 27 women (8.7%), with a χ^2 value of 15.333 and $p < 0.001$. In Kazakhstan, questions about smoking are delicate for women and many may avoid answering real questions about the habit (Table 2).

Table 2.

Smoking status, n = 385.

Variables		Gender						Test of difference				
		Male		Female		Total		χ^2	p-value			
		n	%	n	%	n	%					
What category do you consider yourself to be with regard to smoking?	Never smoked	37	48.7	269	87.1	306	79.5	93.029	<0,001			
	Smoker	29	38.2	10	3.2	39	10.1					
	Former smoker	10	13.2	17	5.5	27	7.0					
	Use non-smoking tobacco products			13	4.2	13	3.4					
Are you currently a daily smoker of tobacco products?	Yes	26	89.7	11	47.8	37	71,2	9.308a	0,002			
	No	3	10.3	12	52.2	15	28,8					
Are you a passive smoker?	Yes	19	25.0	27	8.7	46	11.9	15.333	<0,001			
	No	57	75.0	282	91.3	339	88.1					
		Mean	Max	Min	Mean	Max	Min	Mean	Max	Min		
How many manufactured cigarettes, on average, do you smoke per day?		9	24	0	1	20	0	13	24	0	-8.120	<0,001

For the variable "Have you had more cough in the last few years?" Of the 385 participants, 77 (20.0%) responded 'yes', and of those, 17 (22.4%) were male and 60 (19.4%) females, $\chi^2= 0.332$, $p=0.564$. Of these, 13 (17.1%) males and 60 (19.4%) women had cough with sputum ($\chi^2= 0.212$, $p=0.645$). When asked if they had experienced episodes of wheezing or wheezing, 7 (9.2%) men and 44 (14.2%) women out of 385 respondents answered yes, $\chi^2 = 1.342$, $p = 0.247$. (Table 4).

In response to the question "Have you had more frequent episodes of breathlessness in recent years?" 58 out of 385 respondents (15.1%) answered yes, including 11 men (14.5%) and 47 women (15.2%), $\chi^2=0,026$, $p=0,872$. In recent years, 32 respondents (8.3%) have experienced breathing problems. Twenty (26.3%) of the male respondents and 86 (27.8%) of the female respondents

answered 'yes' to the question "If you catch a cold, does it spread to the respiratory system?", $\chi^2= 0,070$, $p = 0.791$. Eighty-four (24.4%) respondents reported the use of respiratory medications, with 11 (14.5%) males and 83 (26.9%) females ($\chi^2= 5.072$, $p = 0.024$). Out of 385 respondents, 80 (20.8%) received a diagnosis of chronic bronchitis, of which 13 (17.1%) were men and 67 (21.7%) were women, $\chi^2= 0,776$, $p=0.378$. Of the respondents, 9 (2.3%) received a diagnosis of bronchial asthma. All respondents who answered 'yes' were women. To the question "Have you ever had pneumonia?" 52 (13.5%) of the 385 respondents answered 'yes', of which 39 (12.6%) were female and 13 (17.1%) male, $\chi^2=1.050$, $p=0.306$. Among the 385 participants, 40 (10.4%) were diagnosed with other respiratory diseases. Of these, 6 (7.9%) were men and 34 (11.0%) were women, $\chi^2= 0.633$, $p = 0.426$ (Table 3).

Table 3.

Prevalence and characteristics of respiratory symptoms and diseases, n = 385.

Variables		Gender						Test of difference	
		Male		Female		Total		χ ²	p-value
		n	%	n	%	n	%		
Have you had more cough in the last few years?	Yes	17	22.4	60	19.4	77	20.0	0,332	0,564
	No	59	77.6	249	80.6	308	80.0		
Coughing up sputum?	Yes	13	17.1	60	19.4	73	19.0	0,212	0,645
	No	63	82.9	249	80.6	312	81.0		
Have you had episodes of wheezing or whistling breath?	Yes	7	9.2	44	14.2	51	13.2	1,342	0,247
	No	69	90.8	265	85.8	334	86.8		
Have you had more frequent episodes of breathlessness in recent years?	Yes	11	14.5	47	15.2	58	15.1	0,026	0,872
	No	65	85.5	262	84.8	327	84.9		
Have you had any breathing problems in the last few years?	Yes	7	9.2	25	8.1	32	8.3	0,100	0,751
	No	69	90.8	284	91.9	353	91.7		
If you catch a cold, does it spread to the respiratory system?	Yes	20	26.3	86	27.8	106	27.5	0,070	0,791
	No	56	73.7	223	72.2	279	72.5		
Do you take any medication to help you breathe?	Yes	11	14.5	83	26.9	94	24.4	5,072	0,024
	No	65	85.5	226	73.1	291	75.6		
Have you been diagnosed with chronic bronchitis?	Yes	13	17.1	67	21.7	80	20.8	0,776	0,378
	No	63	82.9	242	78.3	305	79.2		
Have you been diagnosed with asthma?	Yes			9	2.9	9	2.3	2,267	0,132
	No	76	100.0	300	97.1	376	97.7		
Have you had pneumonia in the past?	Yes	13	17.1	39	12.6	52	13.5	1,050	0,306
	No	63	82.9	270	87.4	333	86.5		
Have you had any other respiratory diseases?	Yes	6	7.9	34	11.0	40	10.4	0,633	0,426
	No	70	92.1	275	89.0	345	89.6		

Discussion

WHO estimates that nearly one-fifth (22%) of adults worldwide smoke. Most of them use tobacco products every day [28].

Our results show that 10.1% of respondents currently use tobacco. Among men, 38.2% reported smoking, compared to 3.2% among women. Previous studies have also found significant differences in smoking prevalence between genders. Specifically, 36.7% of men identify as smokers, while only 7.8% of women do [28]. Men smoke more than women. Many studies have shown this [19, 29]. This is probably because men have traditionally had more influence and status. These social dynamics affect how public health strategies are developed to reduce tobacco use among women. Gender affects how men and women smoke. Smokeless tobacco use was also reported by 3.4% of participants. Daily smoking was reported by 89.7% of men and 47.8% of women. Moreover, the survey indicates that individuals consume an average of 13 cigarettes per day. The issue of smoking among women is particularly sensitive in Kazakhstan, where social pressure may discourage women from admitting to tobacco use. This may explain the discrepancy between self-reported smoking rates and actual smoking prevalence among women. Underreporting among women may limit the validity of our study results, so future studies should use methods that encourage honest reporting to better reflect the reality of tobacco use among this population.

Prior published studies demonstrated that about every fifth adult in Kazakhstan smokes tobacco, which is 20.8% [13]. About 3.0 million people in Kazakhstan were active users of tobacco products in 2022, according to WHO reports. This ranks Kazakhstan 13th in the WHO European Region and 49th in the world in terms of the total number of tobacco smokers. While the overall use of tobacco products remains high, smokeless tobacco does not have a strong presence in Kazakhstan. In 2019, only 1.4% of adults reported using smokeless tobacco, suggesting that this form of tobacco use is relatively rare in the country [9]. The low prevalence of smokeless tobacco in Kazakhstan may be influenced by cultural attitudes and social norms regarding tobacco use. Smoking is known to be a significant risk predictor for COPD. This finding is consistent with data from several studies which have suggested that tobacco consumption is an important cause of the development of permanent airway obstruction [27]. Indeed, contact of cigarette smoke with the airways induces the release of inflammatory mediators that are accountable for the emergence of COPD [24]. Consequently, combating the smoking epidemic must be a national health priority for public authorities, in order to reduce smoking prevalence, protect public health and encourage smokers to quit.

According to our findings, 20% of respondents reported having more frequent coughs, while 27.5% reported experiencing frequent colds that affect their respiratory system. These symptoms are particularly concerning

because they can lead to chronic respiratory conditions, significantly impacting individuals' overall health and quality of life. Additionally, 20% of respondents have been diagnosed with chronic bronchitis and 14% with pneumonia in the past. Chronic bronchitis and emphysema are two most common diseases that cause COPD [25]. More than a quarter of respondents take medication to improve their breathing. Women showed higher rates of using medications to improve breathing and receiving diagnoses of chronic bronchitis.

Despite some limitations, including limited sample size and possible systematic errors, the results give useful information about the respiratory health status of the population studied. Further research in this area may help to develop more effective programs for the prevention and treatment of respiratory diseases.

Conclusion.

We found a significant prevalence of respiratory symptoms for COPD such as coughing, shortness of breath, and chronic bronchitis. Tobacco smoking emerged as the most important risk factor, with a significant number of respondents reporting current smoking habits and exposure to passive smoking. Reducing the prevalence of COPD, a silent disease that affects public health, should be a national priority. These efforts should focus on preventing the significant risk factors associated with its development.

Conflict of Interest

The authors declare no conflict of interest.

Contribution of the authors

All authors contributed to study conception and design. All authors have read and approve the final manuscript.

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