

Tobacco control collapse in Poland after 2015. Alarming increase in cigarette consumption

Witold A. Zatoński^{1,2}, Kinga Janik-Koncewicz^{1,2}, Jarosław Neneman³, Łukasz Gruszczyński^{4,5}

¹Institute – European Observatory of Health Inequalities, Calisia University, Kalisz, Poland

²Health Promotion Foundation, Nadarzyn, Poland

³Institute of Economics, University of Lodz, Poland

⁴Kozminski University, Warsaw, Poland

⁵HUN-REN Centre for Social Sciences, MTA Centre of Excellence, Budapest, Hungary

ABSTRACT

Introduction: In early 2000s the World Health Organization pointed Poland as an example to the rest of the world in the area of tobacco control. This was achieved by implementing a comprehensive tobacco control regime that resulted in declining smoking rates. Two of its most important elements were the anti-tobacco promotional policy included in national Anti-tobacco Programme and the steady increase of the excise taxes. This changed in 2016 when the tobacco control regime was significantly modified. The aim of the study was to analyse consequences of policy changes on the trends in registered cigarette sales, cigarette consumption and real price of cigarettes.

Material and methods: Data on registered cigarette sales were obtained from the National Statistical Office and the Ministry of Finance. Trends were analysed using Joinpoint regression analysis.

Results: Trend of registered cigarettes sales in Poland was decreasing until 2016. In 2016 cigarette sales reached 41.6 billion and then the trend reversed. In 2022 cigarette sales reached 50 billion thus it increased by 20% (APC 2016-2022 = 3.1, 95% CI: 1.1-5.3). Registered cigarette consumption per capita (15 years and more) in Poland corresponded to the sales data. It declined by 56% from 2,845 in 1999 to 1,259 cigarettes per capita in 2015. Then it started to increase reaching 1,563 cigarettes per capita in 2022 (increase by 24%). Real price of cigarettes was rising steadily since 2001 to 2015 (APC 7.0, 95% CI: 6.4-7.5, $p < 0.001$). Since 2015 to 2020 the level was frozen, and in 2020 it started to decline reaching 7.5 PLN in 2022.

Conclusions: It seems necessary to immediately return to the Anti-tobacco Programme in Poland including i.e. anti-promotional pricing policy towards cigarettes. New strategies should be planned using Poland's successes and experiences in tobacco control from the past.

KEY WORDS: cigarette sales, cigarette consumption, tobacco-related diseases, tobacco control, Poland.

CORRESPONDING AUTHOR: Witold A. Zatoński, Institute – European Observatory of Health Inequalities, Calisia University, Kalisz, Poland, e-mail: w.zatonski@uniwersytetkaliszki.edu.pl

INTRODUCTION

At the end of the 1980s, Poland was one of the countries with the highest prevalence of smoking in Europe and, consequently, the highest lung cancer mortality, especially among men [1]. Since the 1990s, smoking rates steadily declined, and the rate of decline was one of the highest in the world. In 2015, Poland was found in the middle of the smoking prevalence ranking among European countries (26.7% of men and 19.3% of women

smoked then) [2]. Yearly cigarette consumption was less than 1,300 cigarettes per capita (15 years and more) while in 1999 it was around 2,800 cigarettes per capita [3]. Between 1990 and 2015, the standardized death rates due to lung cancer among middle-aged men (aged 35-54) fell from 60/100,000 to 20/100,000, and among women from 15/100,000 to 11/100,000 (years 2005-2015) [1].

The decline in cigarette consumption in Poland was strongly connected to the implementation and

enforcement of tobacco control policies. The Polish law on the protection of health against the effects of using tobacco and tobacco products was adopted in 1995 [4]. It was aimed at counteracting tobacco dependence and protection of health against its consequences, controlling tobacco products, reducing the prevalence and intensity of tobacco use, and decreasing health burden caused by tobacco-related diseases. One of the most important elements of this act was Article 4, which required the government, for the first time in Central and Eastern Europe (CEE), to develop the National Program for Reducing the Health Consequences of Tobacco Smoking (hereafter “the Anti-tobacco Programme”) together with yearly reports on its implementation. It read: “The Council of Ministers establishes a program defining health, social and economic policy, aimed at reducing the use of tobacco products. The Council of Ministers shall submit an annual report to the Sejm on the implementation of this program by April 30” [4]. The amendment of the act from 1999 established the fund for the implementation of the Anti-tobacco Programme in the amount of 0.5% of the excise tax on tobacco products [5].

Moreover, the act introduced many other requirements, some of them very innovative at that time [6]. Not surprisingly the World Health Organization labelled the Polish law as an “example to the rest of the world” [7]. In addition to legislative activities, large-scale intervention and educational campaigns were carried out, including the world famous annual campaign “Quit smoking together with us” (“*Rzuć palenie razem z nami*”) [8]. It was one of the most effective campaigns helping to reduce prevalence of smoking in Poland. It is estimated that, as a result of the campaign organized annually for more than 15 years, over 4 million Poles claimed that they quit smoking [6].

Unfortunately, the act of 1995 was later reorganized with some of its mechanisms being dismantled. Particularly, the act of September 11, 2016 on public health removed Article 4 of the Anti-Tobacco Act and abolished the Anti-tobacco Programme. Although Poland was also obliged to introduce progressive changes imposed by EU law (i.e. in the Tobacco Product Directive, TPD [9]), it only did what was required by the directive, without going beyond its minimum obligations. Other countries have gone further (e.g. a number of EU Member States have introduced plain packaging requirements).

This development was well reflected in Tobacco Control Scale (TCS), a tool to assess the implementation of tobacco control policies at country level [10]. According to the scale, countries that have comprehensive tobacco control policies and undertake new initiatives are of high score and leading tobacco control in Europe (i.e. UK 82 points, the highest score in 2021) [11]. Since 2016 Poland have shown no improvement in policy concerning cigarette prices, smoke free work and other public places, comprehensive bans on advertising and

promotion, health warnings and treatment of tobacco dependence [11-13]. In 2019 and 2021 TCS revealed no activities within new policy domains such as: tobacco control and cessation budget and tobacco industry interference, and the minimal activities within illicit tobacco trade. In these years Poland scored 50 points, compared to the lowest score of 40 in Germany in 2019 and 35 in Switzerland (except for 25 in Bosnia and Herzegovina – a new country) in 2021. Authors underlined that tobacco control in Poland has stagnated over last few years and reports do not include any new developments [11, 13].

Summarizing, Poland has lost its leading role in the area of anti-smoking policy. But more importantly, observed tobacco control measures in the country could affect decreasing trends of cigarette consumption. The aim of the work was to analyse the cigarette sales trend, cigarette consumption rates, trend of real price of cigarettes and discuss the potential consequences for burden of tobacco-related diseases in Poland.

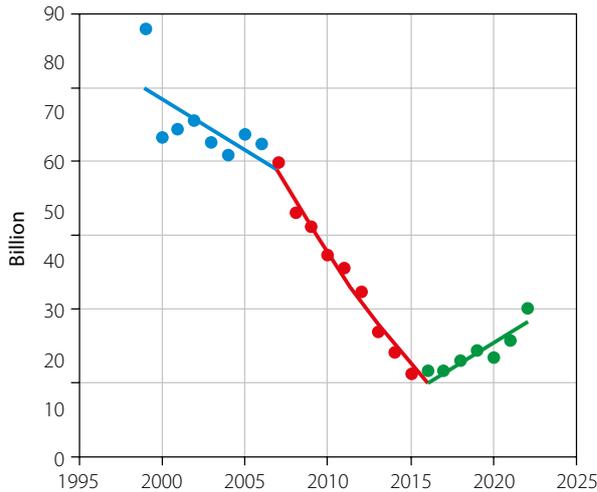
MATERIAL AND METHODS

Data on registered cigarette sales were obtained from the National Statistical Office and the Ministry of Finance. On this basis, cigarette consumption per capita aged 15 years or more was calculated using number of population from the National Statistical Office. Trend in cigarette sales was analysed using Joinpoint regression analysis (Joinpoint Regression Program 4.6.0.0 – April 2018, Surveillance Research Program, US National Cancer Institute). The aim was to determine changes in cigarette sales trend during the studied period. This is a model identifying those points in time (joinpoints), in which the linear slope of the trend changes significantly. Modelling with up to 3 joinpoints (corresponding to up to 4 different trends) was used. The software calculated the annual percentage change (APC) and average annual percentage change (AAPC) with the corresponding 95% confidence intervals (95% CI).

To calculate the real price of cigarettes, the price of a pack of cigarettes “Mars” (as a representative cigarettes) was taken for 1999 till 2010 from the National Statistical Office. Since 2011 Weighted Average Price (WAP) announced by the Ministry of Finance was used. The real price is the nominal price divided by the Consumer Price Index (CPI). For year 1999 the value of the index was 100.

RESULTS

Trend of registered sales of cigarettes in Poland was decreasing until 2016. Between 1999 and 2007 cigarette sales decreased from 88 billion to 69.8 billion, on average by 1.8% yearly (95% CI: -3.1 to -0.5). Since 2007 until 2016 the pace of decline accelerated, and annual percentage decline of cigarette sales averaged 5.9% (95% CI: -1.1 to -4.6). In 2016 registered cigarette sales reached 41.6 billion and then the trend reversed. In 2022 regis-



Period	APC	AAPC	95% CI	p
1999-2007	-1.8	-	-3.1 - -0.5	< 0.001
2007-2016	-5.9	-	-1.1 - -4.6	< 0.001
2016-2022	3.1	-	1.1-5.3	< 0.001

FIGURE 1. Trend of registered cigarette sales in Poland, 1999-2022

Data source: National Statistical Office, Ministry of Finance

tered cigarette sales reached 50 billion (the level that was observed in Poland around 10 years earlier). Since 2016 until the end of observation period sales of cigarettes increased by 20% ($APC_{2016-2022} = 3.1$, 95% CI: 1.1-5.3).

Registered cigarette consumption per capita (for the group of 15 years old and more) in Poland corresponded to the sales data. It declined by 56% from 2,845 in 1999 to 1,259 cigarettes per capita in 2015. Then it started to increase reaching 1,563 cigarettes per capita in 2022 (increase by 24%). While data on registered sales and consumptions are imperfect, they constitute the only available objective source of information.

Real price of cigarettes was rising steadily since 2001 to 2015 (APC 7.0, 95% CI 6.4 – 7.5, $p < 0.001$). During this period the real price increased from 3.53 PLN to 8.51 PLN (by 141%). Since 2015 to 2020 the level was frozen (8.7 PLN), and real price of cigarettes started to decline from 2020 reaching 7.5 PLN in 2022.

DISCUSSION

After the revision of the Anti-Tobacco Law in 2016, the Anti-tobacco Programme was almost completely suspended. As mentioned before, at the beginning it was one of the best tobacco control programs, described by the WHO as an example for other countries. It was also one of the first governmental programs in CEE aimed at reducing the prevalence of smoking, and its financing was guaranteed by the percentage from the excise tax on cigarettes. The bibliographic summary of literature in the field of tobacco smoking in Poland documenting achievements in tobacco control has been published in 2020 [14].

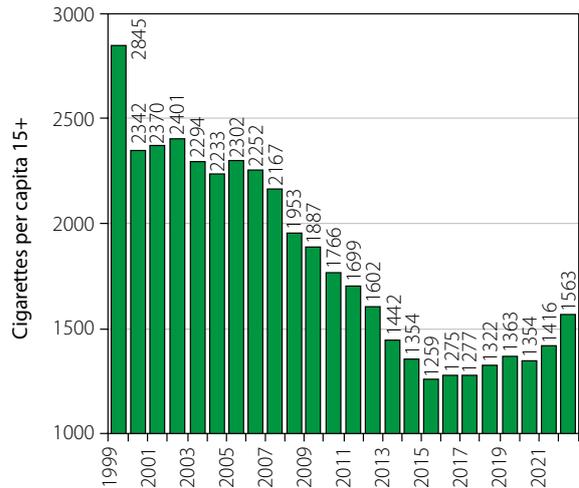
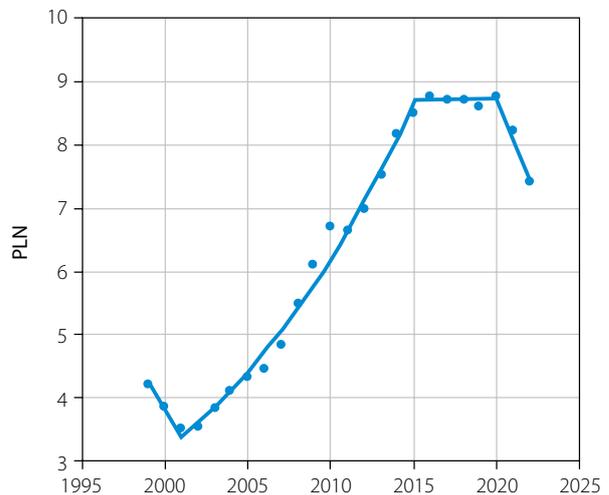


FIGURE 2. Registered cigarette consumption in Poland, 1999-2022

Data source: National Statistical Office, Ministry of Finance



Period	APC	AAPC	95% CI	p
1999-2001	-10.8	-	-19.1 - -1.7	< 0.001
2001-2015	7.0	-	6.4-7.5	< 0.001
2015-2020	0.1	-	-2.9-3.2	> 0.05
2020-2022	-7.4	-	-16.0-2.1	> 0.05

FIGURE 3. Trend of cigarette real price in Poland 1999-2022

Data source: Ministry of Finance, National Statistical Office.

The act (also after the later amendment) contained innovative and pioneering provisions at that time, such as one of the first regulations in the world regarding free treatment of tobacco dependence, one of the first bans on advertising and promotion of tobacco products in the world, and a ban on sponsorship of the media and political parties by tobacco companies. The act also introduced the largest textual health warnings in the world, covering 30% of the cigarette packages, as well as a ban on the production and sale of smokeless tobacco (except for snuff) and an innovative at that time ban on the sale of cigarettes in vending machines. Alongside

these regulatory developments, tobacco excise duty was gradually increased, making those products less accessible to Polish consumers [15].

Based on national experiences and successes, Poland was considered then a hub of anti-tobacco measures in CEE [16], and the main tobacco control players in Poland were Polish Anti-tobacco Society (PTP), the Health Promotion Foundation (HPF) and the Maria Skłodowska-Curie Memorial Cancer Center and Institute of Oncology in Warsaw (CCIO). Together with International Union Against Cancer (UICC) and American Cancer Society (ACS), they organized first international summit of tobacco control leaders from CEE countries calling on their governments to introduce legislative initiatives to reduce tobacco smoking in the region, so called “Declaration of Kazimierz”. Soon after, HPF and CCIO begun to conduct a series of projects, trainings, workshops and summer schools for tobacco control leaders from CEE with the support of foreign institutions such as the Soros Foundation, Open Society Institute or the Bloomberg Initiative to Reduce Tobacco Use [6].

The Anti-tobacco Programme was the fulfilment by the Polish government of its obligations under Article 4 of the Act which obliged the Council of Ministers to establish a program defining social and economic health policy aimed at reducing the use of tobacco products. It was one of the most important educational, prevention and intervention public health programs in Poland. In the years 1995-2006 the main program coordinator was the Cancer Center in Warsaw (CCIO) and the Health Promotion Foundation, and since 2007 – the Chief Sanitary Inspectorate. Representatives of ministries and institutions dealing with health protection, smoking prevention and tobacco control, hundreds of workers of sanitary services and the biggest medical institutes (i.e. CCIO, Institute of Cardiology), as well as non-governmental organizations took part in the implementation of the programme.

In 2012, the Chief Sanitary Inspectorate published a handbook on the application of the act on the protection of health against the consequences of using tobacco and tobacco products, summarizing tobacco control legislation in force at the time [17]. The program was financed from the state budget, and almost PLN 30 million was given for its implementation (ultimately 0.5% of revenues from the excise tax on tobacco products was to be allocated). All legislative and social-antitobacco movement efforts resulted in completely changed attitudes of Poles towards smoking. In 2001, study conducted by Fagerstrom *et al.* [18] showed Poland together with Sweden as the country with the best anti-smoking climate in Europe.

One of the main provisions included in the Anti-tobacco Law of 1995 was free tobacco dependence treatment. Also in this field, Poland showed activity, enabling the development of research on modern, science and evidence-based medicine to treat tobacco dependence

and enable their sale on the market. Poland, and the scientific group led by Professor Witold Zatoński, CCIO, and Professor Robert West, University College London, have particular achievements in collecting pioneering scientific evidence confirming that cytosine is an effective and safe drug in the treatment of tobacco dependence syndrome [19-21]. Currently, such studies are being conducted all over the world [22].

As a result of the implementation of the government program to reduce the health consequences of tobacco smoking, cigarette sales in Poland decreased significantly from 100 billion in the mid-1990s to 41 billion in 2015 [1]. The standardized death rates due to lung cancer among young and middle-aged men (aged 20-64) fell from 62/100,000 to 38/100,000 in years 2001-2015 [23].

However, in mid 2010s the act was partially dismantled. In 2016, the provisions on the implementation of the national program for reducing tobacco-related diseases, the provision on the allocation of 0.5% of excise tax revenue for the implementation of activities, including preventive ones, and the provision on reporting on the implementation of activities in the Sejm, disappeared. In addition, failure to implement its basic provisions, resulted in decline of real prices of cigarettes that led to the reversal of the decreasing trend of cigarette consumption. Between 2015 and 2021, registered cigarette sales increased from 41 to 50 billion cigarettes (by 20%).

Although some fundamental changes were still being made since 2015, particularly following the implementation of the TPD in 2016, the they were mainly directed at nicotine delivery devices (a category which includes electronic nicotine delivery systems (ENDS) and so-called novel tobacco products, such as heat-not-burn tobacco). While many countries (including some of the EU Member States) have been experimenting with new anti-tobacco measures (for example tobacco plain packaging, display bans at points of sale, tobacco retail licensing, single presentation requirements, and increased age limits), the Polish government seemed to be satisfied with the minimum standards for traditional tobacco products set out by the Directive. Moreover, it is worth mentioning here that “Poland was a lead country against TPD taking over Germany’s role in defending tobacco industry interests, and was one of the four countries who voted against directive” [24]. At the same time, the level of enforcement of existing laws remained unsatisfactory (e.g. weak age verification system or lack of reaction to unrestricted sale of flavouring inserts to overcome the ban on menthol cigarettes). Poland has clearly lost its place as a leader in anti-tobacco policies. These developments have also been coupled with a slowdown in the increase of excise duties, which has not kept the pace with the growth in purchasing power of the Polish society. It should be mentioned here that the background for the discussed changes in tobacco control is growing health recession and the rising epidemic of alcohol-related deaths in Poland [25].

The best example of spectacular mistakes in public health policy towards tobacco in Poland was abandoning the anti-promotional pricing policy of cigarettes. While the Anti-tobacco Programme was functioning and the main provisions of the Anti-tobacco Law were implemented, real price of cigarettes was rising from 3.9 PLN/package in 2000 to 8.7 PLN/package in 2015. In years 2015-2019, no excise tax increase was made, which reversed the trend of the growing real price of cigarettes and froze its level in this period. Between 2020 and 2022 the real price of cigarettes decreased by 15% to the level of 7.4 PLN/package. This resulted in rising economic affordability of such products. Neneman calculated that affordability of cigarettes, expressed in number of cigarette packages per minimum earnings, in 2001 was 190 and it declined to 130 in 2014. Then it started to increase and during 7 years it increased by almost 50% reaching again the level of 190 packages in 2021 [15]. Despite this, in 2021 the Polish administration enacted the road map of excise duty rates of cigarettes for 2022-2027. For unknown reasons, this map did not provide for an increase in the excise duty rate on cigarettes in 2022. Poland still has some of the cheapest cigarettes among all the EU Member States [26].

Another devastating element was Poland's decision to change its policy on tobacco production and promoting tobacco as one of the main agricultural/industrial product. Poland has become a giant in the production of cigarettes in Europe and still grows stronger. In the years 2000-2022, the production of cigarettes in Poland increased 2.5 times. While in 2000 cigarette production was 84 billion of pieces and sales was around the same, in 2022 Poland produce 232 billion of cigarettes and domestic sales amounted to 50 billion of cigarettes. The value of export in billion Polish zlotys increased 2.3 times between 2010 and 2019 and reached almost PLN 16 billion [27]. Poland is one of the largest tobacco producers in the European Union. Our country is the third in the world and the second in Europe exporter of tobacco products. The value of Polish exports in 2019 amounted to over EUR 4.1 billion. Its structure is dominated primarily by cigarettes [28]. For every 5 cigarettes produced in Poland, 4 are exported [27]. Tobacco sector, in reports prepared by tobacco industry, is presented as an important segment of Polish economy and a significant contributor to the national production capital, and the production chain of tobacco products, including i.e. agricultural sector, tobacco associations, raw tobacco processing plants, manufacturers of tobacco products, logistics and commercial sector, creates added value at each stage [27].

Another element which increased the chaos in tobacco control policy was the introduction to the Polish market ENDS. First, ENDS attracted all the attention of tobacco control in Poland in last decade, which was visible, for example, in the amendments to the act and expanded provisions regarding ENDS. Although they

are harmful (particularly for children and adolescents), and therefore need to be regulated [29], they pose much lower health risks for adult users than regular tobacco products [30]. Despite this, ENDS have become a central issue in the discussion on optimal tobacco control policy. Secondly, in countries that conduct a classic, sustainable, long-term tobacco control policy, ENDS could be treated as a product that can help people quit smoking conventional cigarettes. In exceptional situations, the use of ENDS may be accepted as harm reduction. Unfortunately, many Polish experts propose ENDS as a medicine for treatment of tobacco dependence syndrome (instead of relying on cytisine which has proven therapeutic effects). ENDS are not a harmless water aerosol, but they contain various chemicals, and the consequences of their long-term use are not yet known [31]. It should be mentioned that in Poland the frequency of ENDS use is moderately low (less than one million users in the adult population), while about 7 million adult Poles smoke conventional cigarettes. It seems to be justified to use science and evidence-based drugs in treating tobacco dependence, with proven effectiveness, rather than recommending a highly addictive substance in form of electronic devices. However, rising use of ENDS among children and youth in Poland is a serious challenge for public health in Poland [32].

CONCLUSIONS

There is no comprehensive concept of a public health strategy for tobacco control in Poland. Within a dozen of years, Poland from being a leader of tobacco control became an outsider. The collapse of public health policy towards tobacco-related diseases requires immediate action. Taking into account the collapse of public health policy in Poland (weakening of tobacco and alcohol policy, failure to control the covid pandemic, high air pollution, etc.), it seems necessary to establish a Ministry of Public Health in Poland, based on successful experience from Sweden for example. One of the first actions is to undertake the baseline assessment of public health in Poland and immediately return to the Anti-tobacco Programme including among others anti-promotional pricing policy towards cigarettes. New strategies should be planned using Poland's successes and experiences in tobacco control from the past.

DISCLOSURE

The authors report no conflict of interest.

References

1. Zatoński WA, Zatoński M, Janik-Koncewicz K, et al. Hundred years of cigarette smoking in Poland: three phases of the tobacco epidemic. *J Health Inequal* 2017; 3(2): 118-122.
2. GBD 2015 Tobacco Collaborators. Smoking prevalence and attributable disease burden in 195 countries and territories, 1990-2015: a systematic analysis from the Global Burden of Disease Study 2015. *Lancet* 2017; 389(10082): 1885-1906.

3. Hoffman SJ, Mammone J, Rogers Van Katwyk S, et al. Cigarette consumption estimates for 71 countries from 1970 to 2015: systematic collection of comparable data to facilitate quasi-experimental evaluations of national and global tobacco control interventions. *BMJ* 2019; 365: l2231.
4. Ustawa o ochronie zdrowia przed następstwami używania tytoniu i wyrobów tytoniowych. Dz. U. 1996 nr 10 poz. 55 [Act on health protection against the consequences of consumption of tobacco and tobacco products. *Journal of Laws of the Republic of Poland*, 1996, no. 10, item 55].
5. Ustawa z dnia 5 listopada 1999 r. o zmianie ustawy o ochronie zdrowia przed następstwami używania tytoniu i wyrobów tytoniowych. Dz. U. 1999 nr 96 poz. 1107 [Act amending the act on health protection against the consequences of the use of tobacco and tobacco products. *Journal of Laws of the Republic of Poland*, 1999, no. 96, item 1107].
6. Zatoński M, Zatoński WA, Przewoźniak K, et al. The significance and impact of the Polish Anti-tobacco Law. *J Health Inequal* 2016; 2(1): 32-35.
7. Blanke DD, de Costa e Silva V. Tools for advancing tobacco control in the 21st century. *Tobacco Control Legislation: an introductory guide*. Geneva: World Health Organization; 2004.
8. Douglas CE, Zatoński M, Janik-Koncewicz K, et al. The Great American and Polish Smokeouts, efforts to combat growing health disparities in the tobacco epidemic, and sustaining efforts to end combustible tobacco use. *J Health Inequal* 2019; 5(2): 124-128.
9. Directive 2014/40/EU of the European Parliament and of the Council of 3 April 2014 on the approximation of the laws, regulations and administrative provisions of the Member States concerning the manufacture, presentation and sale of tobacco and related products and repealing Directive 2001/37/EC. *OJ L* 127, 29.4.2014; 1–38.
10. Joossens L, Raw M. The Tobacco Control Scale: a new scale to measure country activity. *Tob Control* 2006; 15(3): 247-253.
11. Joossens L, Olefir L, Feliu A, et al. The Tobacco Control Scale 2021 in Europe. Available from: <https://www.tobaccocontrolscale.org/> (accessed: 21 June 2023).
12. Joossens L, Raw M. The Tobacco Control Scale 2016 in Europe. Available from: <https://www.tobaccocontrolscale.org/> (accessed: 21 June 2023).
13. Joossens L, Feliu A, Fernandez E. The Tobacco Control Scale 2019 in Europe. Available from: <https://www.tobaccocontrolscale.org/> (accessed: 21 June 2023).
14. Połtyn-Zaradna K, Zatońska K, Janik-Koncewicz K, et al. Literature review on tobacco smoking in Poland from 1960 to 2020. Bibliographic summary. *J Health Inequal* 2020; 6 (2): 104-115.
15. Neneman J. Alcohol and tobacco: different tax policies and different health and revenue consequences in the 21st century in Poland. *J Health Inequal* 2022; 8(2): 119-123.
16. Zatoński MZ. State, society, and the politics of smoking in Poland during and after communism. PhD. London: School of Hygiene and Tropical Medicine; 2018.
17. Biliński P, Skowron J, Sternik M, et al. Podręcznik w zakresie stosowania ustawy o ochronie zdrowia przed następstwami używania tytoniu i wyrobów tytoniowych [Manual on the application of the Act on health protection against the consequences of the use of tobacco and tobacco products.] Główny Inspektorat Sanitarny, Warszawa 2012.
18. Fagerstrom K, Boyle P, Kunze M, et al. The anti-smoking climate in EU countries and Poland. *Lung Cancer* 2001; 32(1): 1-5.
19. Zatoński W, Cedzyska M, Tutka P, et al. An uncontrolled trial of cytosine (Tabex) for smoking cessation. *Tob Control* 2006; 15(6): 481-484.
20. West R, Zatoński W, Cedzyska M, et al. Placebo-controlled trial of cytosine for smoking cessation. *N Engl J Med* 2011; 365(13): 1193-1200.
21. Zatoński W, Zatoński M. Cytosine versus nicotine for smoking cessation. *N Engl J Med* 2015; 372(11): 1072.
22. Rigotti NA, Benowitz NL, Prochaska J, et al. Cytisincline for smoking cessation. A randomized clinical trial. *JAMA* 2023; 330(2): 152-160.
23. Zatoński WA, Janik-Koncewicz K, Zatoński M. Role of primary prevention in lung cancer control in Poland. *J Thorac Oncol* 2021; 16(10): e93-e94.
24. Joossens L, Raw M. The Tobacco Control Scale 2013 in Europe. Available from: <https://www.tobaccocontrolscale.org/> (accessed: 21 June 2023).
25. Zatoński WA, Janik-Koncewicz K, Zatoński M. Life expectancy and alcohol use health burden in Poland after 2002. *J Health Inequal* 2022; 8(1): 4-16.
26. Eurostat. Statistics explained. Comparative price levels for food, beverages and tobacco. Available from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Comparative_price_levels_for_food_beverages_and_tobacco (accessed: 23 June 2023).
27. Hagemeyer J, Maliowska A, Poniatowski G, et al. Wpływ produkcji wyrobów tytoniowych na polską gospodarkę [The impact of the production of tobacco products on the Polish economy.] Warsaw: CASE – Center for Social and Economic Research; 2020.
28. Trade.gov.pl. Wyroby tytoniowe [Tobacco products]. Available from: <https://www.trade.gov.pl/branze/zywnosc-napoje-i-wyroby-tytoniowe/wyroby-tytoniowe/> (accessed: 7 September 2023).
29. Gruszczynski L (ed.). The regulation of e-cigarettes international, European and national challenges. Edward Elgar Publishing, Cheltenham 2019.
30. Lindson N, Theodoulou A, Ordóñez-Mena JM, et al. Pharmacological and electronic cigarette interventions for smoking cessation in adults: component network meta-analyses. *Cochrane Database Syst Rev* 2023; 9: CD015226. DOI: 10.1002/14651858.CD015226.pub2.
31. Corrèa PCRB. No controversy: e-cigarettes are not a treatment for tobacco/nicotine cessation. *J Bras Pneumol* 2022; 48(5): e20220283. DOI: 10.36416/1806-3756/e20220283.
32. Janik-Koncewicz K, Parascandola M, Bachand J, et al. E-cigarette use among Polish students: findings from the 2016 Poland Global Youth Tobacco Survey. *J Health Inequal* 2020; 6(2): 95-103.

AUTHOR'S CONTRIBUTIONS

WAZ, KJK prepared research concept and design of the publication. KJK, JN took part in data collection, analyses and interpretation. KJK and ŁG prepared the first draft of the article. All authors critically revised and approved the final text of the publication.