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Original article

Cancer prevention and public health

The incidence and economic impact of dual smoking by office workers in Poland

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Abstract

Introduction. Smoking tobacco is the first cause of deaths of men and second cause of deaths of women in Poland. The financial consequences reach 92 billion PLN annually. The new tobacco products gain their popularity especially among young adults, challenging public health and economy.

Material and methods. An anonymous questionnaire has been conducted in two weeks of March 2024 among office workers in Poland. The survey was conducted using CAWI method. Participation was voluntary.

Results. Two statistically significant differences were observed. The incident of smoking heated tobacco and dual smoking decreased with age. There was no statistically significant difference between sexes and choice of tobacco product.

Conclusions. The studied population chose HTPs and dual smoking on a larger scale than in other studies. The workplace plays a significant role in a health promotion and should address the rising trend of smoking new tobacco products as well as dual smoking.

Keywords: tobacco, cost, promotion, workplace, economic

Introduction

Smoking tobacco is the primary cause of death among men and second cause of deaths among women in Poland [1]. It leads to a heavy burden on the healthcare system as well as the budget, resulting in lost lives, lost years in health, lost productivity, and the significant costs of disease treatment. According to the research, a smoker's life is 10 years shorter than in case of non-smoker [2]. The percentage of lost years in health is 20.1% for men and 11.7% for women [2]. The financial consequences reach 92 billion PLN annually which exceeds by 4 times revenue from the sin tax [3]. The direct cost of smokers' treatment from the National Health Fund's budget is 50 billion PLN. Moreover, there is almost 42 billion PLN of indirect costs, for example due to employee sick leave as well as lost working hours due to breaks taken by employees [4].

Giving the above, activities aimed at tobacco limitation and cessation, including the ones at work, should continue to be a priority. The World Health Organization identifies smoking tobacco as one of the main public health issues and risk factors responsible for premature mortality from non-communicable diseases. Despite continuous efforts aimed at education, limitation of sale, legal regulations (for example prohibition of smoking in public places) and significant progress in this area, countries face new challenges due to the introduction of products with heated tobacco (HTPs) and e-cigarettes. The new products have gained popularity [5] especially among young adults, who are susceptible to manipulation from the ubiquitous advertising in their surrounds [6]. The competition between legal regulations and the tobacco industry increases the seriousness of this issue [7].

Heated tobacco products and e-cigarettes have been introduced as an alternative to traditional (combustible) cigarettes, but their impact on health is still not fully known. However, there are reports about the impact of HTPs on acute respiratory and cardiovascular health [8].

These alternative products have been considered to support the cessation of smoking traditional cigarettes, practiced by 13% of users, but their effectiveness is still inconclusive [9]. Yet another even more concerning trend has appeared — dual smoking [10] which is when one person smokes two types of tobacco product (for example a combustible cigarette and HTP).

Material and methods

An anonymous, original questionnaire was conducted over two weeks in March 2024 (March 4–March 18) among office workers of the selected company operating in Warsaw, Poland. The survey included questions related to lifestyle choices, *inter alia* smoking, which is the subject of this article. The questions received by employees were as follows:

1. “How often do you smoke traditional cigarettes?”
2. “How often do you reach out for heated tobacco?”

Each of those questions provided four-stage answers to choose:

- a. 1–4 cigarettes/sticks daily;
- b. More than 5 cigarettes/sticks daily;
- c. Less than 1 cigarette/stick daily — occasionally;
- d. Never.

The survey was conducted using the computer-assisted web interviewing (CAWI) method. It was sent through internal communication to 2070 office workers. The work is performed in front of a screen monitor, and for some, it also includes decision-making positions and driving company car, which is defined as occupational exposure according to the local regulations. Participation in the survey was voluntary.

Statistics

The participation rate was 25% (466). Among respondents 90% were Polish-speaking employees and 10% were English-speaking. The majority of respondents were women (65.24%), while 33.48% were men and 1.29% did not declare their sex. The average age was 34 years and the average weight was 72 kg (67 kg for women and 83 kg for men). Based on the body mass index (BMI) calculations, almost 27% (124) of the employees participating in the survey were overweighted and almost 9% (41) were obese. Data are presented in table I.

For the purposes of assessing the correlation between the preferred tobacco product, including dual smoking, and sex as well as age, a series of χ^2 and Spearman correlation tests were performed. The group of employees who did not declare their sex (8 people) were excluded from the analysis, therefore the research group consisted of 458 employees.

Results

The majority of all respondents across both sexes declared that they never smoke cigarettes and never smoke heated tobacco — both 87.55% (401).

In total, nearly 17% (76) of employees participating in the survey declared smoking: 8.3% (38) smoke combustible cigarettes, 8.3% (38) HTPs and 4.15% (19) smoke both. Among smokers, the proportions are as follows: 40% used traditional cigarettes and 40% used heated tobacco products. It was also noted that 20% of smokers used both tobacco products simultaneously with different frequencies. The assumption of a minimum of 5 observations in each field was met, so the χ^2 test was applied and didn't show a statistically significant difference between the sexes. However it is noted that women in this group more frequently reached out for traditional cigarettes and were dual smokers, than men. The results are presented in table II.

In the next step it was analyzed whether the age of smokers is correlated to the chosen tobacco product as well as dual smoking. Two statistically significant differences were observed. The incident of smoking heated tobacco (first observation) and dual smoking (second observation) decreased with age. The results are presented in table III.

DISCUSSION

The study provides a view on dual smoking among office workers in Poland (combustible cigarettes and heated tobacco products). Although the results did not show statistically significant differences between sexes, there was a statistically significant correlation between smoking and age, which showed that reaching out for heated tobacco as well as dual smoking decreased with age. Studies on the whole population showed that 28.8% of adults in Poland smoke on a daily basis, with 27.1% being women and 30.8% men [1], and the tendency is growing comparing to the previous years. When it comes to the working population, 26% of professionally active men and 16% of women are smokers [11]. The research on office workers presented in this article showed a lower rate of smoking employees vs population (17% vs. 28,8%), however there was higher rate of HTPs users (8.26% vs. 4%) [12]. Other research findings on the working population confirmed that smoking is more prevalent among physical employees (blue collar) [13], which can explain the lower smoking rate in this article's research group.

The conducted analysis showed a statistically significant correlation between smoking heated tobacco as well as dual smoking and age. The likelihood of smoking heated tobacco products decreased with age which is confirmed by other studies, showing that young adults prefer this type of tobacco over traditional cigarettes [13]. Dual smoking also decreased with age, which is reflected in research showing the behavior of young people and their motivations for smoking both types of tobacco [14]. This research also showed that 20% of smokers among employees responding to the survey declared dual smoking. This result is higher than figures from a nationwide study, which showed that 9.1% of smokers used cigarettes and heated tobacco products simultaneously [15]. Therefore the reasons behind dual smoking among employees need further research.

The population of the research in question are office employees in Poland. The workplace has a significant influence on employee health and is recognized as appropriate for the implementation of preventive and health promoting initiatives by both international organizations (WHO) and state organizations (Ministry of Health). In June 2022, a comprehensive study by the Prof. J. Nofer Institute of Occupational Medicine was devoted to the subject of health programs at work [16]. In this report, we can find literature proving the effectiveness of workplace health programs, references to absenteeism and presenteeism, as well as numerous recommendations to support employers in mitigating the effects of an

aging and shrinking workforce. This study confirms the validity and importance of further activities in the area of health promotion at work.

Many of those initiatives are addressed to groups of employees and have an educational aspect (for example thorough webinars, training sessions). Two of the solutions proposed in a recently published report from the Nofer Institute are: creating online support groups and enhancing stress management [17]. There is also a large segment of solutions and products addressed to individuals, including digital interventions through smart devices and mobile applications for the purposes of personalized healthcare. The primary goal of any health promotion, including that in the workplace, should be educating and increasing the health literacy of employees, who then skillfully reach out for and use the available solutions to suit their individual health needs, including personalized health care driven by technological innovations, which can be more interesting for young adults. This is important especially when targeting the younger population, which, as we can see from this and other studies, choose HTPs and practice dual smoking.

Tobacco smoking has significant financial, health, and social consequences on a wide scale. It affects the health of individuals, their own lives and those of their loved ones, as well as employers, the budget, and social security systems. The emergence of the new trend of dual smoking, especially among young people, is endangering their health and the future of a shrinking workforce, which has an impact on the whole economy.

It is noticeable from this research as well as from other published literature, that action is required to address the issue of dual smoking. Personalized health care is not without significance and can form a crucial part in managing those challenges, once employees are equipped with the proper knowledge and tools.

Limitations

This study has several limitations. The CAWI method which was used and its voluntary approach results in limited impact on responsiveness. The participants group was dominated by women and some fields have few responses. The original questionnaire allowed to research a wider scope of lifestyle behaviors for the employer's needs, but at the same time it limits the possibility of comparing the results with other studies using standard questionnaires.

Conclusions

This article provides data on the incidence of dual smoking by office workers in Poland. The studied population chose HTPs and dual smoking on a larger scale than in other studies. Further research is needed to evaluate motivations and facilitators behind dual smoking as well as health consequences. The workplace plays a significant role in health promotion, and should address the rising trend of smoking new tobacco products as well as dual smoking by young employees. Employers' initiatives should be adapted to young employees' needs, taking into considering their preferences to use innovative solutions.

Table I. Data of participants: sex, overweight and obesity

		Women	Men	Undeclared	Total
Sex	N	304	156	6	466
	[%]	65.24%	33.48%	1.29%	100%
Overweight	N	59	64	1	124
	[%]	12.66%	13.73%	0.21%	26.61%
Obesity	N	25	16	1	41
	[%]	5.36%	3.43%	0.21%	8.80%

Table II. Correlations between sex and choice of tobacco product: traditional cigarettes, heated tobacco or both

		Women (1)	Men (2)	Total	(1) and (2)
Traditional cigarettes	N	26	12	38	$\chi^2 = 1.099$ $p = 0.577$
	[%]	42.62%	35.29%	40.00%	
Heated tobacco	N	22	16	38	
	[%]	36.07 %	47.06%	40.00%	
Traditional cigarettes and heated tobacco simultaneously	N	13	6	19	
	[%]	21.31%	17.65%	20.00%	
Total		61	34	95	

Table III. Correlation between age and choice of tobacco product: traditional cigarettes, heated tobacco or both

			Age
Traditional cigarettes	N	Rho Spearman	-0.078
	[%]	p	0.094
Heated tobacco	N	Rho Spearman	-0.145
	[%]	p	0.002
Traditional cigarettes and heated tobacco simultaneously	N	Rho Spearman	-0.098
	[%]	p	0.036

Article information and declarations

Data availability statement

The data is in the possession of the author and can be provided on request.

Ethics statement

The survey used for the purposes of this research was anonymous and didn't include questions about personal nor sensitive data. The survey was not conducted among patients, only office workers, who agreed to participate and voluntarily and independently provided answers through the link received from the internal communication team at the workplace. Participants were informed that results will be a subject of further research. Data were gathered and kept in the internal system, safe in terms of GDPR.

Authors contributions

Conceptualization, formal analysis, methodology, writing — original draft preparation.

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Conflicts of interest

The author declare no conflict of interest.

Supplementary material

None.

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