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# Exposure to passive smoking among current smokers and non-smokers

## Abstract

**Introduction:** Few studies have evaluated exposure to passive smoking among current smokers. The aim of our study was to assess environmental tobacco smoke (ETS) in current smokers, as well as attitudes towards smoking.

**Material and methods:** We used a questionnaire containing questions about epidemiological information and the history of smoking, including exposure to ETS. The study was conducted in a group of 114 healthy individuals (mean age 29.7 years).

**Results:** 57 of the participants (50%) declared to be daily smokers, 32 (28%) had never smoked, 11 (9.6%) were ex-smokers, and 14 (12%) defined themselves as occasional-smokers.

The total exposure to ETS of the entire group was 89.47% (current smokers 87.72%, never-smokers 93%). No significant difference in the range of exposure to ETS according to the place of exposure was found. Symptoms occurring most often during exposure to ETS in the group of smokers were: sputum production 42.1%, cough 31%, lacrymation 24.6%, wheezing 21.0%. Never-smokers suffered mainly from cough 50%, dyspnea 46.9%, lacrymation 46.9%.

Wheezes occurred significantly more often in the group of current smokers than in never-smokers (21% v 3.2%), while dyspnea was significantly more frequent in never-smokers than current smokers (48.4% v 13.7%). Smokers were less in favor of introducing a smoking ban than never-smokers (public places 77.6% v 100%, friends' houses 39.6% v 86.7%, pubs and discos 41.1% v 84.4%). Over 66% of smokers declared their wish to quit smoking. Seventy percent of subjects who had been exposed to ETS in childhood started smoking significantly earlier than those who had not been exposed.

**Conclusions:** Our study showed the problem of 'double' exposure to tobacco smoke. Current smokers are in favor of a smoking ban in public places.

**Key words:** environmental tobacco smoke pollution, passive smoking, cigarette smoking, Eastern Europe, Poland

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## Introduction

Smoking is still an important problem in many countries. While the number of smokers in Western Europe decreases, in many countries of Eastern Europe the numbers of smokers remains high. In Poland the proportion is about 29% of men and 18% of women currently smoking [1]. The statistics concerning active smoking are often published and well-known, whereas environmental tobacco smoke (ETS) is much more difficult to estimate [2].

The difficulties include determining a measurement unit which could be reliable. Researchers look at nicotine and its metabolites' concentration in the blood, urine and hair. The lack of data is however also due to a lesser interest in the subject. Many studies have proved that substances present in side stream smoke, to which passive smokers are exposed, are extremely harmful. Substances burned in the tip of a cigarette, are 50 times more concentrated than those in the inhaled smoke [3]. It is well documented that exposure to ETS leads to respira-

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tory tract diseases in childhood [4, 5], recurrent infections [6], lung cancer and chronic obstructive lung disease [3, 7, 8]. A population's exposure to ETS can reach up to 90%, as shown in the large study Global Youth Tobacco Survey (GYTS) [9].

Poland is one of the countries with a persistently high exposure to second hand smoke [4]. GYTS conducted in the Czech Republic, Hungary, Poland and Slovakia among schoolchildren aged 13–15 revealed a considerably higher smoking prevalence compared to worldwide data [10]. According to GYTS, women's smoking will be an important public health issue in the very near future.

Social status and social habits correspond with the additional exposure to ETS in current smokers. Interactions among smoking members of families, co-habitants or co-workers are the factor influencing the approbation of smoking and make it more difficult to sustain the personal decision to give up smoking. It is important to raise the problem, start analyzing the phenomenon in order to better encourage people to quit smoking.

The aim of this research was to evaluate the range of exposure to ETS among current smokers and to assess the attitude of current smokers, and never-smokers, to the problem of cigarette smoking. We intended to stress the problem of 'double' exposure in current smokers. Special attention was paid to the age of participants.

## Material and methods

Our study was based on a questionnaire distributed among healthy friends and families of authors and among volunteers. Subjects suffering from tobacco-related diseases were excluded. The survey was filled in a self-reliant and anonymous way by interviewees.

The questionnaire was prepared on the basis of the authors' previous studies and was modified according to Global Youth Tobacco Survey (GYTS) conducted by Centers for Disease and Prevention.

On the baseline, the participants answered the questions about current or past smoking, number of cigarettes smoked every day and the period of smoking. According to these answers, subjects were described as daily-, former-, occasional- and never-smokers (according to the WHO definition) [11].

Questions were asked concerning present and childhood exposure to secondhand smoke (or ETS, environmental tobacco smoke) at home, work and other places. We tried to assess the period of time of this exposure in years, in days per week and in hours per day. Interviewees were also asked about the symptoms they experienced during exposure to cigarette smoke.

The other part of the survey questions applied to the acceptance of smoking in various places and the support for introducing a smoking ban in public places, especially pubs and discos. In the last part of the survey, participants were asked to choose positive and negative descriptions relating to smokers and the smoking habit.

The research was conducted on a group of 114 people, 74 women and 40 men.

The average age of the interviewees was 29.7 years (range: 19 to 75). Sixty one investigated persons (53.5%) were students, 34 (29.8%) were working, eight were studying and working, and seven (6,1%) were retired.

## Statistical analysis

The data was evaluated using the Statistica 6.1 program. For data comparison, the Mann-Whitney test was used. The results were accepted as statistically significant when  $p < 0.05$ .

## Results

According to our survey, 57 of the participants (50%) declared themselves to be daily smokers, 32 (28%) had never smoked, 11 (9,6%) were ex-smokers, and 14 people defined themselves as occasional-smokers (Figure 1). The group of current smokers was significantly younger than the group of former and never-smokers. Mean time of smoking was 13.6 years ( $\pm 12.2$ ) in current smokers, the mean pack years was:  $13.5 \pm 18.4$  in the group of current smokers and  $4.4 \pm 8.6$  in ex smo-

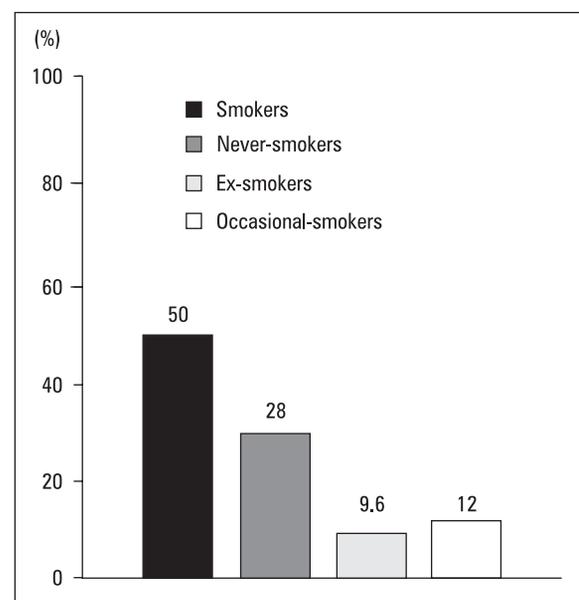


Figure 1. The history of cigarette smoking in the investigated group

kers. The mean time of abstinence was  $4.4 \pm 3.9$  years.

The group was small, therefore further analysis concerning age and sex did not reveal significant differences.

The total exposure to ETS in the entire group was 89.47%, meaning that 10.53% had not suffered from passive smoking. The percentage of current smokers exposed to ETS was 87.72%, while 93% of never-smokers reported contact with second-hand smoke. Our study did not reveal significant differences in the range of exposure according to the place of exposure. Smokers and never-smokers were similarly exposed: at home (84.44% v 89.47%), at work/university (86% v 92%) and at other places (83.72% v 91.3%).

During exposure to active and passive smoking, both the smokers and the never-smokers suffered from certain unpleasant sensations. However, the proportions of specific complaints and the attitude towards these symptoms are different in the two groups. The symptoms occurring most often during exposure to tobacco smoke in the group of smokers were: sputum production 42.1%, cough 31%, followed by lacrymation 24.6%, wheezing 21.0%, sneezing 15.6%, dyspnea 12.3%, vertigo 10.5% (Figure 2). The group of never-smokers suffered mainly from cough 50%, dyspnea 46.9%, lacrymation also 46.9%, vertigo 29%, sputum production 28.1%, sneezing 12.5% and wheezing 3.1%. Wheezes occurred significantly more often in the group of smokers than in never-smokers (21.0% v 3.2%,  $p < 0.05$ ). Dyspnea was reported by 13.7% smokers and 48.4% of never-smokers ( $p < 0.05$ ).

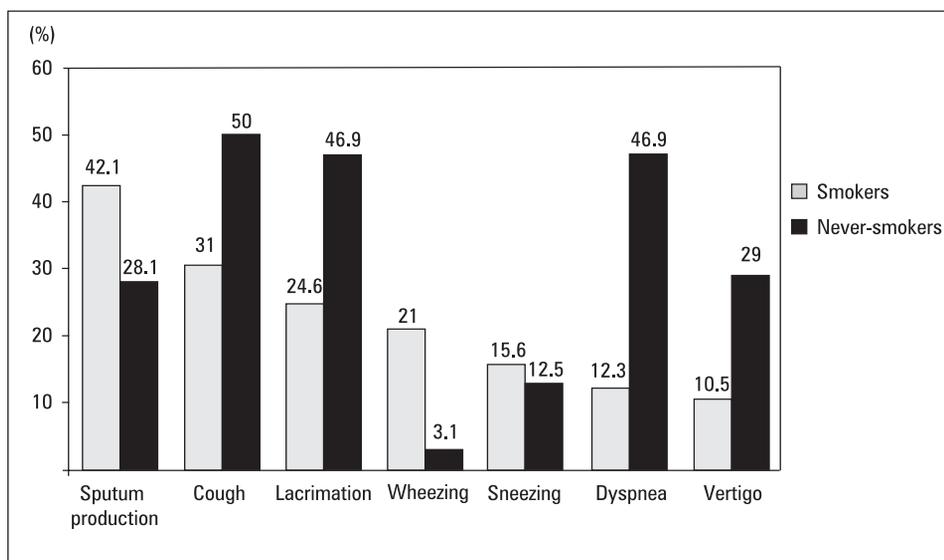
Evaluating the attitude towards smoking in certain places was one of the key goals of the study. Most current smokers objected to smoking in public places, but their attitude was less enthusiastic compared to never-smokers (public places like offices, schools, hospitals 77.3% v 100.0%, trains 81.8% v 96.9%, taxis 66.0% v 93.3%, bus stops 37.3% v 90.6%, friends' houses 39.6% v 86.7%, pubs and discos 41.1% v 84.4% ( $p < 0.05$ ).

Smoking was perceived as dangerous and unhealthy by both groups. From the adjectives suggested in the questionnaire, the smokers chose most often: unhealthy (80%), pleasant (49%), dangerous (38.6%), senseless (22.8%), unfashionable (22.8%), unaesthetic (26.3%), unethical (12.3%), interesting (10.5%), allows you to make friends (7%), fashionable (5.2%), a manifestation of courage (3.5%) (Figure 3).

In spite of the awareness of the dangers of smoking, 49% of smokers described smoking as pleasant. On the other hand, 66.7% of smokers said they wanted to quit smoking.

In addition, 25% of smokers perceived smoking as unaesthetic and senseless. None of the never-smokers thought smoking to be a manifestation of courage, pleasant or interesting, while more than half of them thought it was unhealthy, senseless and dangerous (Figure 4).

The questionnaire also contained questions about the exposure to ETS in childhood. The worrying fact is that, in our study, more than 70% of subjects suffered from passive smoking while they were children (76.36% of smokers and 81.25% of never-smokers). Those numbers are even more



**Figure 2.** Differences in the proportion of symptoms reported by smokers and never-smokers after exposure to tobacco smoke. Significant differences were observed in the case of wheezing and dyspnea ( $p < 0.05$ )

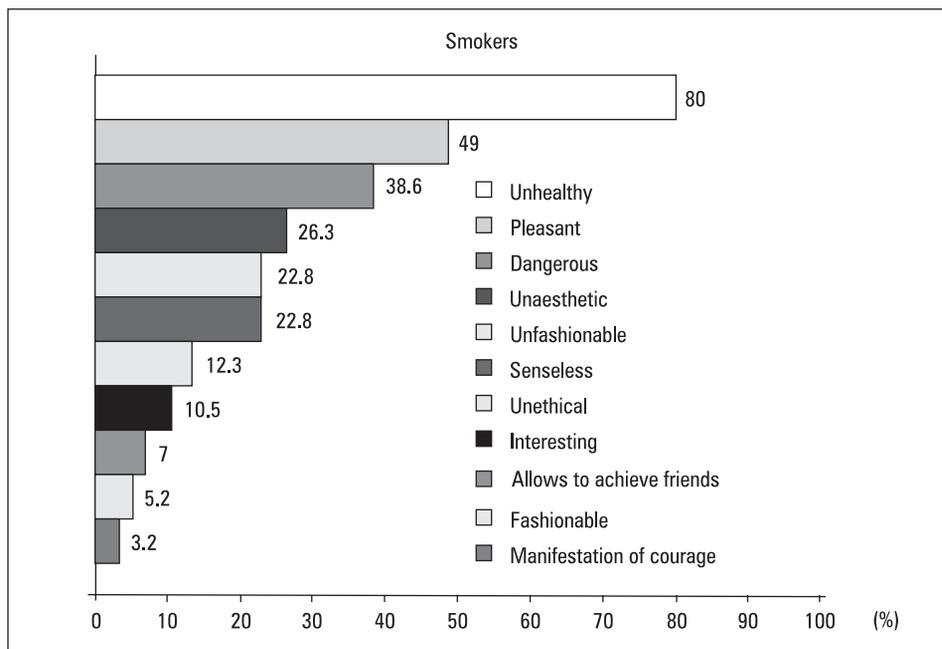


Figure 3. Perception of smoking among current smokers

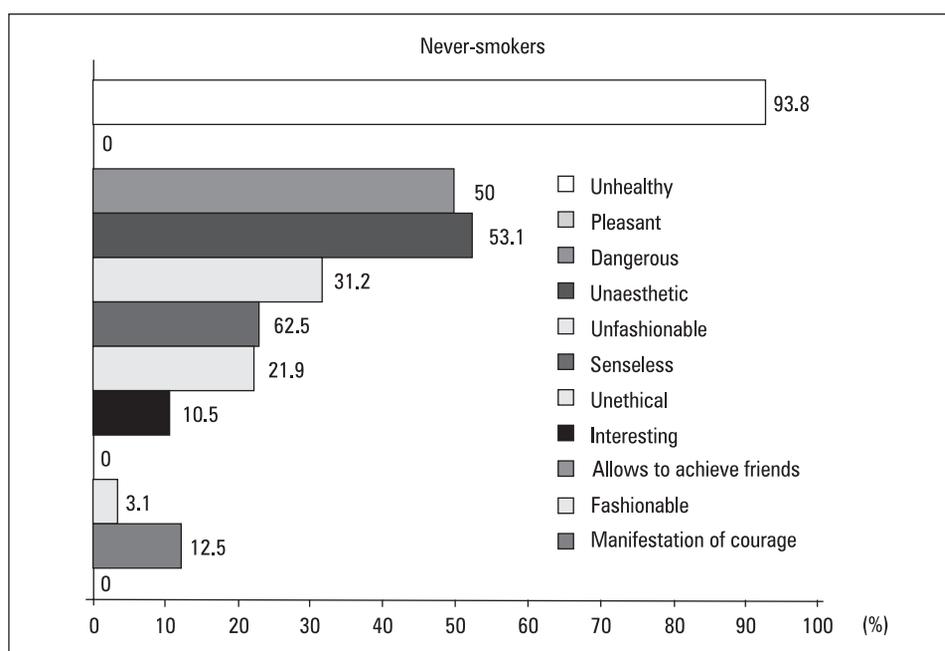


Figure 4. Perception of smoking among never-smokers

worrying as we found that the mean age of the starting to smoke was 20 in the group exposed to ETS but 25 in the non-exposed group ( $p < 0,05$ ).

### Discussion

In this study we took into consideration not only the very high exposure to ETS among current smokers, but also the attitude of the participants

towards the problem of ETS. While the studies concerning the range of exposure to ETS in different populations are numerous, there are not many assessing this phenomenon in terms of current smokers and passive smokers.

The exposure to ETS in different countries varies from about 10% to 90% [9, 12]. The rate depends on the country, the population and also on the methods of research. We used a survey

method which is regarded as one of the most effective [2]. Our group is relatively small, which may be the result of eliminating interviewees suffering from tobacco-related diseases. Moreover, the demographic data differs from those of a population of typical Polish smokers. However, our observations showed many issues which need further investigation. We found a high level of exposure to ETS reported by both current smokers and passive smokers. This data is similar to findings presented in the work of Robinson et al. [13] and Warren et al. [9]. The bias of our study might be connected with the fact that current smokers are more often surrounded by other smokers, while non-smokers asked about ETS tend to exaggerate the problem.

The exposure to ETS did not vary in different locations, something which is comparable with the results of other studies [9, 14]. It was not surprising that opinions about addiction to cigarettes among non smokers were very harsh. As the awareness of the negative effects of smoking on health rises, many people start to complain and protest against smoking in their presence. This is one of the reasons which made us ask about the attitude towards introducing a smoking ban in our country. The interesting fact is that it was not only the never-smokers who supported the idea of a smoking ban in public places, but also a great number of smokers agreed with the idea. Implementation of the smoking ban in public places is supported by 59.4% of smokers and 87.3% of never-smokers. The smoking ban was less welcomed in pubs and discos (41.1% in the group of smokers and 84.4% in the group of never-smokers). There is strong agreement that smoking should be banned, especially in public places. Even current smokers agree, although not as eagerly.

The issue of a smoking ban is raised in many countries. The statistics say that the number of smokers is decreasing, as well as decreases the number of people exposed to ETS, which is utterly important concerning the health of children. Some occupations would benefit more than others due to the ban, especially it was noted in the group of bartenders and bar workers [15]. Experience from the countries which have enforced smoking bans in public places is very encouraging in terms of its efficacy [16].

The symptoms reported by current and never-smokers varied significantly. Our survey covered the symptoms which are most associated with side stream smoke. Never-smokers complained of cough, dyspnea and lacrymation which are typical of chronic respiratory diseases (as in the study of

Maziak et al.) [6]. In comparison, smokers suffered mostly from sputum production and wheezing. This may be a consequence of the difficulty for smokers in distinguishing the signs caused by smoking itself from those originating from ETS, or their adaptation to typical symptoms, leading them to notice others. It is also possible that exposure to ETS intensifies serious smoking-related symptoms such as sputum production and wheezing [17]. This observation is interesting and novel but also highly probable.

We find it intriguing and innovative to analyze the attitudes towards smoking which are different among current and never-smokers. Both groups considered smoking to be unhealthy, dangerous and unaesthetic. At the same time there are opposed opinions from which we could infer that this addiction assists contact with other people and enriches social life. The negative approach to smoking presented by never-smokers is proven by the fact that none of them perceived smoking as pleasant ( $p < 0.05$ ), interesting or as a manifestation of courage. In this study, about 50% of smokers declared smoking to be pleasant. In the study of Sieminska et al., pleasure was the main reason for starting smoking among students [18].

Finally, the most striking result of our study is the statement that childhood exposure to ETS leads to a significantly earlier onset of smoking in adult life. A similar observation was reported by Skorge et al. [19]. More than 75% of subjects said they had been exposed to ETS in childhood in Poland towards the end of the 20th century [4]. It is widely known that beginning of smoking at a young age is another unfavorable prognostic factor for lung cancer, which remains the most dangerous tobacco-related disease [20]. The issue of childhood exposure has been described many times before, and our findings again emphasize the harmful effects of ETS in childhood.

## Conclusions

Our study points the necessity of increasing efforts in order to reduce the exposure to ETS in Poland (nicotine dependence among males and females in Poland is still very high [21]). Exposure to tobacco smoke is as great in non-smokers as it is in current smokers. Dangerous symptoms such as dyspnea result from exposure to tobacco smoke, while wheezing was reported by both groups. There is an aggravation of smoke-related symptoms noticed in non-smokers. Both groups are in favor of introducing a smoking ban in public places. In addition, both current and never-smokers are awa-

re of the many negative aspects associated with smoking. However, current smokers remark also on the important role their addiction plays in their social life. Finally, the results of our study testify once more to the fatal effects of childhood exposure to ETS.

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