

# The assessment of exposure to tobacco addiction in children and youth of the selected schools in the Wielkopolska Province

## Ocena narażenia na uzależnienie od tytoniu dzieci i młodzieży uczącej się w wybranych szkołach na terenie województwa wielkopolskiego

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**Wstęp.** Częstość palenia tytoniu przez młodzież w Polsce należy do jednej z największych w Europie. Regularne palenie rozpoczyna, mimo tendencji ogólnoswiatowych i działań uświadamiających na temat szkodliwości nałogu, duża grupa młodzieży w wieku szkolnym, zwłaszcza gimnazjalnym.

**Cel pracy.** Aby skutecznie zapobiegać temu zjawisku niezbędne jest poznanie jego przyczyn i oszacowanie skali, jak również ocena grup największego ryzyka wśród młodzieży. Stało się to celem niniejszej pracy.

**Materiał i metody.** Badania przeprowadzono w styczniu i lutym 2007 r. wśród 228 uczniów z klas 1-3 z wybranych szkół gimnazjalnych. 50% respondentów stanowili uczniowie szkół państwowych, zaś kolejne 50% – uczniowie szkół prywatnych. Wśród ankietowanych znajdowało się 98 dziewcząt i 130 chłopców. Średnia wieku badanych uczniów wyniosła 15 lat (od 13 do 17 lat). Narzędziem wykorzystywanym w badaniu był autorski kwestionariusz ankiety. Ankiety były anonimowe, a respondenci dobrowolnie wyrazili zgodę na udział w badaniach. Zależności między wybranymi zmiennymi określono za pomocą testu F Fishera oraz testu Gaussa przy poziomie istotności  $p < 0,05$ .

**Wyniki.** Problem nikotynizmu wśród uczniów występuje głównie w szkołach państwowych. W szkołach prywatnych zjawisko to występuje sporadycznie. Wyniki przeprowadzonych badań wskazują na ścisły związek pomiędzy paleniem młodzieży, a zwyczajami palenia bądź niepalenia w domu. W domach, w których nie ma zwyczajów palenia ponad 50% młodych ludzi również nie sięga po papierosa. Większość ankietowanych palaczy (72,0%) po pierwszym papierosa sięgnęła już przed 14 rokiem życia motywując swój krok ciekawością (42,31%). 96,0% badanej populacji uczniów zdaje sobie sprawę z negatywnych skutków palenia, a mimo to ponad 46% z nich ma już za sobą wypalenie pierwszego papierosa, z czego 18% przyznaje się do regularnego palenia.

**Wnioski.** Inicjacji palenia w znaczącym stopniu sprzyja oddziaływanie czynników środowiskowych w bezpośrednim otoczeniu dziecka, przede wszystkim rodziny, jak również presja rówieśników. Zjawisko palenia tytoniu wśród młodzieży ma charakter grupowy i sprzeczny z panującą obecnie, zdrową „modą na niepalenie”. Istnieje zatem ogromne zapotrzebowanie na szkolną edukację zdrowotną zwłaszcza w okresie nauki w gimnazjum, a także wdrażanie kompleksowych programów promujących zdrowie.

**Słowa kluczowe:** uzależnienie od tytoniu, nikotynizm, dzieci, młodzież, szkoły

**Introduction.** The frequency of tobacco smoking by the youth in Poland is one of the greatest in Europe. A large number of school age children, particularly pupils of junior secondary schools, start smoking regularly despite the worldwide trends and measures designed to inform young people about the dangers of the addiction.

**Aim.** In order to prevent this phenomenon, it is necessary to identify its causes, estimate its range and analyse the highest risk groups among the adolescents, which became the objective of this study.

**Material and methods.** The research was conducted in January and February of 2007 among 228 pupils of grades 1-3 from selected junior secondary schools. 50% of the respondents were pupils of the state schools and the remaining 50% attended private schools. The respondents group comprised 98 girls and 130 boys. The average age of the subjects was 15 years (from 13 to 17 years). The tool used to collect the research data was a questionnaire developed by the authors. The questionnaires were anonymous and voluntary. The relations between the selected variables were established by means of the Fisher's F-test and the Gauss's test at the significance level of  $p < 0.05$ .

**Results.** The problem of nicotine among pupils concerns mainly the state schools, being marginal in private schools. The results of our study indicate a close connection between smoking by young people and the presence or absence of the tobacco smoking habit in their homes. Over 50% of the subjects from homes with no such habit are non-smokers. The majority of the questioned smokers (72.0%) smoked their first cigarette before the age of 14, motivating their decision (42.31%) by curiosity. Although 96.0% of the analysed population comprehend the negative effects of smoking, over 46% have already smoked their first cigarette and 18% admit regular smoking.

**Conclusions.** The tobacco smoking initiation is to a large extent induced by environmental factors present in a child's immediate surroundings, particularly connected with the family and peer pressure. The problem of tobacco smoking among adolescents is group-induced, contrary to the current and healthy non-smoking trend. Therefore there is a great demand for the school health education, particularly during the period of learning in junior secondary schools, as well as for the implementation of comprehensive health-promoting programmes.

**Key words:** dependence on tobacco, nicotine, children, youth, schools

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## Introduction

The health-related consequences of tobacco smoking are first of all connected with two types of effects: addiction to nicotine and both passive and active exposure of the whole organism to over 4000 chemical compounds present in tobacco smoke, including about 40 carcinogens [1].

A thorough analysis of tobacco and tobacco smoke showed a large number of toxic components able to trigger the deterioration of various systems of the human body, in children as well as youth and adults [2,3].

Tobacco smoking is one of the major factors increasing the risk of development of cardiovascular diseases (e.g. CHD, aortic aneurysm, cerebrovascular diseases, peripheral arterial disease, hypertension, cholesterolaemia, arrhythmia), dental diseases (dental decay, acute or chronic gingivitis and periodontitis, acute necrotizing ulcerative gingivitis), non-malignant pulmonary diseases (emphysema, chronic bronchitis, tuberculosis, pneumonia, flu, pneumomycosis, bronchiectasis, asthma, hoarseness), malignant tumours (of lungs, bronchi, trachea, larynx, oesophagus, liver, colon, pancreas, kidney, bladder), depressions, paediatric complications (sudden infant death syndrome, slow growth, hindered learning ability). Furthermore, smoking may intensify negative changes in neurodegenerative diseases or contribute to infertility in young people [1,2,3,4,5].

So far tobacco smoke has been proven conducive to the development of about 14 types of cancer [5,6].

One must have in mind the fatal consequences of passive smoking in children, such as more frequent airways infections, more frequent symptoms of respiratory system illnesses, lower lung capacity rate and increased probability of hospitalization due to bronchitis and pneumonia [6,7].

Tobacco products are considered to be the actual or presumable cause of over twenty diseases or groups of conditions in children and youth. It is an undeniable fact that about 80 000 Polish men and women die prematurely each year as a result of cancer and cardiovascular diseases caused by cigarette smoking [8,9].

Scientific research conducted in recent years indicates that passive smoking also affects foetal life. Currently diagnosed types of pregnancy pathology connected with tobacco smoking concern the mother as well as the embryo, foetus, placenta, newborn, and the child [7,10].

Polish epidemiological data of the last decade showed that almost 30% of infants born each year were exposed to passive smoking for nine months before birth [9]. Later such children grow up in an

environment where tobacco smoking is generally accepted and, as a result, they become accustomed to tobacco smoke. Sometimes they pay the highest price because the adults were not able to create an environment free of tobacco smoke.

It has been observed that the children of women smoking during pregnancy and puerperium have a higher morbidity and mortality rate up to the age of five. Such children are more often hospitalized, visit doctors and need specialist help. Newborns of smoking parents are significantly more often treated for pneumonia and bronchitis. In this group sudden infant death syndrome is also more frequent [7].

Tobacco smoking is a serious worldwide social problem, originating in childhood and youth. At least 3/4 of people attempt to try smoking in these periods of their lives [8,11]. The majority of adult smokers start smoking regularly in the second decade of their lives [3].

Alarming statistics indicate that each day about 500 children in Poland start their adventure with cigarettes, going down the road to regular smoking in their adult lives. Epidemiological estimates suggest that half of them will die prematurely as a result, 25% before the age of 60 [4]. Children grow up believing that tobacco smoke is a normal component of everyday life, not only because of its presence in many Polish homes, but also because cigarettes are commonplace at schools and in the streets [4,12]. Undoubtedly, the mechanisms of developing an addiction are complicated and conditioned by the interaction of many psycho-social, socio-demographic and environmental factors [13].

In order to successfully prevent nicotine addiction, it is necessary to find out why exactly young people decide to start smoking.

## Aim

The aim of this study is to carry out a detailed analysis of nicotine addiction and the factors of exposure of youth to this phenomenon in selected schools of the Wielkopolska Province, and to emphasize the seriousness of this problem in young people.

## Material and methods

The research was conducted in January and February 2007. It was carried out among 228 pupils of years 1-3 from selected junior secondary schools. 50% of the respondents were pupils of state schools and the remaining 50% attended private schools. The average age of the subjects was 15 years (13 to 17 years) (tab. I). 98 of the respondents were girls and 130 were boys (tab. II). The tool used to collect data for the research was a questionnaire developed

by the authors (21 questions). The questionnaires were anonymous and voluntary. The relations between selected variables were established by means of Fisher's F-test and Gauss's test at the significance level of  $p < 0.05$

Table I. Respondents' age

age	13	14	15	16	17
total	30 13,16%	18 7,89%	126 55,26%	52 22,81%	2 0,88%

Table II. Respondents' gender

gender	female	male
total	98 42,98%	130 57,02%

## Results

The largest group among the respondents are the pupils whose parents have higher education degrees (56.14% of the mothers and 52.63% of the fathers), followed by secondary education (24.56% of the mothers and 28.07% of the fathers) and secondary vocational education (14.91% of the mothers and 13.16% of the fathers). 2.63% of both fathers and mothers have primary education. One person among the respondents does not have a father (tab. III).

72.81% of the mothers and 79.82% of the fathers of the respondents work on a full time basis. Unemployed fathers and mothers constitute small groups of, respectively, 3.51% and 11.40% (tab. IV).

Table III. Education of the parents

Education	mother		father	
Primary	4	2,63%	6	2,63%
Vocational	34	14,91%	30	13,16%
Secondary	56	24,56%	64	28,07%
Higher	128	56,14%	120	52,63%
I do not know	6	2,63%	6	2,63%
I do not have a parent	-	-	2	0,88%

Table IV. Professional activity of the parents

Forms of professional activity	mother		father	
Other	26	11,40%	32	14,04%
has his/her own business	2	0,88%	2	0,88%
does not work	26	11,40%	8	3,51%
works part-time	8	3,51%	4	1,75%
works full-time	166	72,81%	182	79,82%

Table V. Respondents' place of living

place	city		country	
total	206	90,35%	22	9,65%

The majority of the respondents (90.35%) come from towns. 9.65% of the pupils live in the country (tab. V).

Cigarettes are smoked in as many as 134 family homes of the pupils (58.77%) (tab. VI). In each of 76 homes (33.33%) there is one smoker, in 44 homes (19.3%) several people smoke, whereas in 14 homes everybody smokes (6.14%). Cigarettes are not smoked at all only in 94 family homes (41.23% of the homes). As indicated in table VII, pupils from homes where cigarettes are smoked, in general (about 21%) describe this problem as having existed for a long time (since they can remember or for a long time). In the homes of smokers an average of 16 cigarettes are smoked every day (tab. VIII).

71.05% of the respondents claim that their parents have talked to them about the harmful effects of tobacco smoking (tab. IX). 27% of the pupils who smoke regularly or occasionally have never talked to their parents about the harmful effects of smoking.

Table VI. Number of smokers in the family home

1 person		several people		nobody		everybody	
76	33,33%	44	19,30%	94	41,23%	14	6,14%

Table VII. How long cigarettes have been smoked in the family home

I do not know/I do not remember	64	47,76%
for 1 year	2	1,49%
for 12 years	2	1,49%
for 13 years	2	1,49%
for 16 years	6	4,48%
for 17 years	2	1,49%
for 18 years	4	2,99%
for 19 years	2	1,49%
for 2 years	4	2,99%
for 20 years	2	1,49%
for 3 years	2	1,49%
for 30 years	2	1,49%
for 6 years	2	1,49%
for a long time	14	10,45%
for several years	6	4,48%
Occasionally	4	2,99%
since I remember	14	10,45%

Table VIII. Number of cigarettes smoked in the family home

up to 2	4	2,90%
3 to 5	12	8,70%
6 to 15	20	14,49%
15 to 30	30	21,74%
more than 30	30	18,84%
I do not know/ I do not count	42	30,43%
a lot	2	1,45%
it depends on a day	2	1,45%



Table IX. Number of parents talking about the harmful effects of smoking

yes		no	
164	71,93%	64	28,07%

Table X. Reason for smoking a cigarette

out of boredom	30	29,41%
I wanted to try /out of curiosity	14	13,73%
because I felt like it	2	1,96%
as a joke	18	17,65%
for the company	20	19,61%
to show off	2	1,96%
for a boy	16	15,69%

Table XI. Reason for smoking a cigarette

out of boredom	2	1,92%
I wanted to try it /out of curiosity	44	42,31%
because I felt like it	4	3,85%
as a joke	2	1,92%
for the company	4	5,00%
to show off	2	2,50%
for a boy	2	2,50%
stress / nervousness	4	5,00%
I felt bad	2	2,50%
I was angry	2	2,50%
my friends talked me into it	4	5,00%
without any reason	8	10,00%
I do not remember / I do not know	24	23,08%

Table XII. Awareness of the consequences of smoking

type of answer	number of respondents giving the answer	
yes	226	99,12%
no	2	0,88%

The problem of nicotineism also occurs in the homes of junior secondary school pupils who smoke regularly. All family members smoke in more than 50% of such homes. Nobody smokes in almost 50% of the homes of the subjects who have never smoked.

The majority of the subjects (72%) started smoking cigarettes after the age of 14 years, most often during the first year of junior secondary school (tab. X).

The junior secondary school pupils who smoke most often, admit to smoking 1-15 cigarettes a day. On the average they smoke 7 cigarettes daily.

In 42.31% of the pupils curiosity is given as the reason why they started smoking. The remaining respondents claim their reasons for starting smoking are boredom, desire to do something as a joke, or to show off, as well as stress/nervousness, bad physical and mental state or anger (tab. XI).

99% of the respondents are aware of the consequences of smoking. Only one student was not

aware of them and it is a person who has never smoked. 96% of the respondents realise that smoking cigarettes is harmful (tab. XII). Two unaware pupils have never smoked, but talked to their parents about the harmful effects of smoking.

## Discussion

The frequency of smoking by the youth in Poland is one of the greatest in Europe [9]. Increasing numbers of school-age children start smoking regularly despite preventive measures aimed at informing the youth about the harmfulness of this addiction [12].

Research indicates that first attempts at smoking are made already by the pupils of the sixth grade of primary schools [14,15]. Smoking among the youth attending secondary schools has already become a serious problem, the phenomenon being particularly widespread among both schoolboys and schoolgirls of vocational schools. Every third student of vocational school smokes every day [4].

The data of the recent years show that in Poland about 70% of boys and 60% of girls of 15 years of age have already tried to smoke, and 32% and 29% respectively, smoke regularly [13,15]. Our research indicates that cigarettes are smoked by about 18% of the youth attending junior secondary schools (from grades 1-3) in the Wielkopolska Province. Our research data about the percentage of smoking young people correspond with the world data. In Great Britain, the prevalence of regular smoking among young people aged 11-15 years, reaches 9% [14]. In the USA, 6.8% of junior secondary school students (aged 11-14 years) were current smokers in 2006, but the smoking rates among high school students (aged 15-18 years) are much higher (19.4%) [16]. The Canadian data suggest that the rate of current smokers in 2004-2005 among 10-15-year-olds was 1.7%, but 10.4% of the 15-17-year-old boys and girls are current smokers [17]. Furthermore, the world statistics indicate that the smoking rates between boys and girls are similar [16,17]. They are quite different than ours, where the smoking rates for boys (20%) are higher than for girls (15%).

About 8% of the smoking pupils smoke tobacco on a daily basis, whereas about 10% smoke occasionally (from time to time). Additionally, about 29% admitted to making a one-time attempt at smoking in the past (the so-called incidental smoking). The percentage of smoking pupils differs according to the type of junior secondary school: it is higher in the state schools (about 30%) and lower in the private schools (about 5%).

The majority of youth (72%) started smoking over the age of 13 years, most often during the first and second year of junior secondary school, i.e. at the age of 13-14 years (48.5% of the smokers).

The results of numerous research indicate that there is a close relation between smoking among the youth and smoking among their parents [2,12,18]. The data gathered so far show that the percentage of young people who think that they will smoke in the future is three times higher among the children of smoking parents than among the children of non-smoking parents. Among the youth with parents smoking tobacco every day the percentage of regular smokers was the highest [2,12,18,19].

Such a phenomenon, consisting in the transfer of behaviours both healthy and harmful for health, has been confirmed, among others, by a long-term research conducted in the USA [2].

It is equally important that young people ignore the risk of the development of nicotine addiction, and therefore to a large extent underestimate the tobacco smoking-generated costs which they will have to bear in the future. Among the pupils of junior secondary schools who smoke but think that they will quit smoking within 5 years, fewer than 40% actually stop smoking. The remaining subjects still smoke after 5 years. Only later, when they experience the symptoms of the diseases of the respiratory, cardiovascular or alimentary systems, do they realise the harmful effects of smoking. Research conducted in the countries whose inhabitants earn high incomes indicate that as early as in the age of 16 years many young smokers regret having started smoking and at the same time feel that they are unable to overcome the addiction. As in the case of other addictive substances, total abstinence is certainly possible. However, the percentage of smokers who managed to quit smoking without undergoing the detoxification treatment is low. The recent research suggests that among the habitual smokers who try to give up smoking on their own 98% return to the addiction within 12 months from the attempt to quit [5].

Tobacco smoke is harmful not only to smokers but also to people around them. Diseases triggered by active smoking are almost identical to those caused by passive smoking [4,6].

In Poland deaths of lung cancer caused by passive smoking constitute 17% in the population of non-smokers above the age of 35 years (11% of men, 20% of women). The risk of lung cancer is connected with the time of exposure. The risk doubles when the exposure to smoking by one of the parents lasts at least 25 years, whereas in the case when both parents smoke, the risk doubles after 12.5 years of exposure. It should be emphasized that the premature mortality due to tobacco-induced diseases caused by exposure to smoke is a phenomenon which reinforces unfavourable health tendencies resulting from the premature mortality in the population of middle-aged people (35-69 years) [2,11,13].

Out of every two smokers who started smoking in their youth and smoke all their lives, one will die prematurely due to a disease triggered by tobacco smoking. For a long time the mortality rates of smokers have been 3 times higher in comparison with non-smokers in all age ranges, starting with adolescents. One of the studies carried out by the WHO shows that the number of tobacco-related deaths worldwide may triple within the next 20 years. Smoking is currently known to be the cause of over 25 various groups of diseases [8,11,19].

Psycho-social determinants of tobacco smoking by children and youth are closely related to other types of risky health behaviours typical for adolescence. The absence of the habit of spending time in a different way, parental negligence and the need to be accepted by peers may bring about the risk of developing the addiction to smoking and other pathologies in young people. This fact indicates the need to integrate prevention programs concerning, among others, tobacco smoking, alcohol drinking and the use of other types of addictive substances, into school health promotion programs.

Various legislative, economic and educational measures against smoking have been taken by many countries in recent years. Smokers are being criticized, isolated and educated. The number of public places in which smoking is allowed decreases, which gives hope for the containment of this phenomenon in the near future [12,19,20,21,22].

## Conclusions

In the analysed group of junior secondary school pupils, 46% of the respondents have already smoked their first cigarette. The largest number of the subjects smoked their first cigarette under the age of 14 years. Teenagers deciding to smoke the first cigarette most often motivate this action by curiosity. Environmental factors in the immediate surroundings of the respondents, such as peer pressure, habits and standards of behaviour observed at home, are significantly conducive to the initiation into the habit of smoking. The fact that the subjects' parents smoke is particularly harmful, as it is conducive to the occurrence of health disorders in the children (passive smokers) and is one of the most important factors affecting the early initiation into regular smoking by the children. In order to achieve the desired effects, it is necessary to introduce school educational programs, particularly during the period of attending junior secondary school, as well as to implement comprehensive health promotion programs and change the attitude of parents towards tobacco smoking.

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