The level of nicotine addiction and motivation to stop smoking among young adults – students from the Świętokrzyskie region

Poziom uzależnienia od nikotyny oraz motywacja do zaprzestania palenia tytoniu wśród młodych dorosłych – studentów regionu świętokrzyskiego

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Abstract

Background. Smoking affects over one billion people worldwide, and about 26% of the population in Poland. It is a serious medical and social problem leading to addiction and many chronic diseases.

Objectives. An analysis of the problem of tobacco addiction and motivation to quit smoking among young adults, and an assessment of socio-demographic determinants of these phenomena important for intervention and prevention.

Material and methods. The study included a group of 143 young adults identified as currently smoking from among 600 students from the Świętokrzyskie region. The study included: a self-constructed questionnaire, the Test of Motivation for Ceasing Smoking by Nina Schneider and the Fagerström Test for Nicotine Dependence (FTND).

Results. Strong addiction to nicotine is presented by 17.5% of respondents, and low level of motivation to quit by 36.4%. Age, gender, place of residence, and health self-assessment of respondents have no connection with the level of addiction and motivation to quit smoking ($p > 0.05$). More strongly addicted individuals have a lower level of motivation to quit smoking ($p < 0.05$).

Conclusions. Among the young adults studied, the most frequently observed characteristics were those of behavioral addiction. What is worrying, however, are quite numerous cases of strong addiction and low motivation to quit smoking. The basic features of nicotine addiction in the study group are the need to smoke shortly after waking up and a large number of cigarettes smoked per day. The level of motivation to quit smoking depends on the strength of nicotine addiction. Improving the health of Poles and protection against tobacco-related diseases indicates the need to take preventive measures at the earliest possible stages of human life.

Key words: addiction, students, smoking

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Streszczenie

Wprowadzenie. Palenie tytoniu dotyczy ponad miliarda osób na całym świecie, a w Polsce ok. 26% populacji. Jest poważnym problemem medycznym oraz społecznym, który prowadzi do uzależnienia oraz wielu chorób przewlekłych.

Cel pracy. Analiza problemu uzależnienia od tytoniu i motywacji do rzucenia palenia wśród młodych dorosłych oraz ocena uwarunkowań społeczno-demograficznych tych zjawisk, które są istotne podczas podejmowania działań interwencyjno-profilaktycznych.

Materiał i metody. Badaniem objęto grupę 143 młodych dorosłych aktualnie palących papierosy, wybranych spośród 600 studentów z regionu świętokrzyskiego. W badaniu zastosowano: kwestionariusz ankiety własnego opracowania, Test Motywacji do Zaprzestania Palenia według Schneider oraz Test Uzależnienia od Nikotyny autorstwa Fagerströma.

Wyniki. Silne uzależnienie od nikotyny wykazuje 17,5% badanych, a niski poziom motywacji do rzucenia palenia – 36,4%. Wiek, płeć, miejsce zamieszkania i samoocena zdrowia badanych nie mają związku z poziomem uzależnienia i motywacją do rzucenia palenia ($p > 0,05$). Osoby silniej uzależnione mają niższy poziom motywacji do rzucenia palenia ($p < 0,05$).

Wnioski. Wśród badanych młodych dorosłych najczęściej obserwowano cechy uzależnienia behawioralnego. Niepokojące są jednak dość liczne przypadki uzależnienia silnego i niskiej motywacji do rzucenia palenia. Podstawowe cechy uzależnienia od nikotyny w badanej grupie to konieczność palenia tuż po przebudzeniu oraz duża liczba wypalanych papierosów dziennie. Poziom motywacji do rzucenia palenia zależy od siły uzależnienia od nikotyny. Poprawa stanu zdrowia i ochrona przed chorobami zależnymi od tytoniu wymaga podjęcia działań profilaktycznych w jak najwcześniejszych okresach życia człowieka.

Słowa kluczowe: uzależnienie, studenci, palenie tytoniu

Background

Smoking currently affects 1.1 billion people worldwide[1] and most smokers live in developing countries.[2] In Poland, smoking is widespread and significantly affects the quality and length of citizens' lives. In 2006, the National Health Fund reported that about 9 million adult Poles, including about 40% of men and 20% of women, smoke every day. Most often they were middle-aged Poles (30–50 years old) and residents of large cities, including Warsaw.[3] In 2014, according to data from the European Health Interview Survey (EHIS), 26.1% of the population (32.5% of men and 20.3% of women) smoked daily and occasionally.[4]

Smoking is responsible for approx. 5.1 million deaths per year.[5] It is a risk factor for many chronic non-communicable diseases (referred to as tobacco-related), including cancer, cardiovascular and respiratory diseases.[3,5–8] Passive exposure to tobacco smoke also increases the risk of death and development of various chronic diseases.[9] The resulting symptoms and deaths usually occur after a long asymptomatic period. Smoking is also the cause of approx. 40% of premature deaths in the male population. Every year about 50,000 Poles die prematurely from tobacco-related diseases. Smoking and its health consequences also affect the economic situation of families and healthcare costs.[3]

A serious consequence of smoking is also the physical addiction to nicotine, which was confirmed by the World Health Organization (WHO) as early as 1975.[10] In the *International Statistical Classification of Diseases and Related Health Problems ICD-10*, this problem is described in Chapter V under code F.17 as mental and behavioral disorders caused by smoking.[3,11] Addiction syndrome includes behavioral, cognitive and physiological symptoms. They develop after repeated use of nicotine and usually include: 1. a strong need to use the substance, 2. difficulties in controlling its use, 3. continued use despite detrimental effects, 4. putting the use of substances before other activities and commitments. 5. increased tolerance, and sometimes 6. occurrence of physical symptoms of abstinence syndrome.[11] Smoking dependence is triggered by 2 types of addiction – pharmacological dependence and behavioral addiction – that interact with each other.[10,12] Pharmacological dependence on nicotine is associated with the need to maintain its appropriate concentrations in sera. Behavioral addiction, on the other hand, is complex and depends on psychological, environmental, cultural, and social factors – it is the behavior that is either learned or psychosocially generated.[10] The limit determining the threshold of physical dependence is the nicotine concentration in sera of about 300 ng/mL. In non-addicts who smoke up to 5 cigarettes a day and are able to stop smoking without symptoms of abstinence, this concentration is approx. 50–70 ng/mL.

Commencement of smoking in adolescence is usually associated with negative patterns from the social environment (smoking parents, teachers and peers). Smoking is often seen by young people as a symbol of adulthood. It serves to increase self-esteem and is a way of dealing with failure and tension. The vast majority of adult smokers (90%) start smoking regularly before the age of 18. The resulting nicotine addiction causes smokers to continue their habit because of the pleasure, relaxation or stimulation they experience while smoking.[10]

Despite the smoke-free campaigns popular in recent years, smoking is still a huge public health problem.[10] Prevention of smoking-related diseases and treatment of

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tobacco dependence syndrome are among the most effective and least costly ways to reduce the health and socio-economic consequences of smoking.[3] The health effects of tobacco use depend, among other things, on the duration and intensity of smoking. Therefore, the improvement of negative health indicators requires actions to be taken among young adult Poles who make their first life decisions, including implementing behaviors which have a negative impact on health. Therefore, the aim of this study was to analyze the problem of tobacco dependence and motivation to quit smoking among young adults – students of universities in Świętokrzyskie region, and to assess the socio-demographic conditions of these phenomena important for intervention and prevention.

Material and methods

The research carried out in 2017 covered a group of 143 currently smoking young adults aged 19–28 years – students of Jan Kochanowski University and the Kielce University of Technology. They were selected from among 600 young adults to whom an initial questionnaire assessing the prevalence of smoking has been addressed. The questionnaire covered students who gave their informed and voluntary consent to participate in the study. Representatives of medical faculties (nursing, midwifery, physiotherapy, and medical rescue) constituted 29% of the respondents (n = 174), and of non-medical faculties (economic and administrative, humanistic and pedagogical, and technical) – 71% of the group (n = 426). Ultimately, tobacco smokers (n = 143) included 27 students from medical faculties (18.9%) and 116 (81.1%) students from non-medical faculties. The duration of the respondents' addiction ranged from 1 to 13 years (3.5 years on average). The age of current smokers ranged from 19 to 28 years (22.4 years on average). The study group was dominated by men (60.8%) and persons from small towns (42.7%). Rural dwellers constituted 31.4% of the survey group.

Research material has been collected with the use of the following tools: 1. self-constructed questionnaire, 2. Test of Motivation for Ceasing Smoking by Nina Schneider and 3. Fagerström Test for Nicotine Dependence (FTND). The Test of Motivation for Ceasing Smoking was developed at the University of California Los Angeles, USA. Standardization of the test to Polish conditions was performed in the Department of Epidemiology and Cancer Prevention of the Maria Skłodowska-Curie Institute of Oncology in Warsaw.[10] The tool consists of 12 yes-no questions with a 2-step rating system (0–1). Low motivation was considered a score <7 points, and high motivation was considered a score ≥7 points.[3,13,10] The FTND consists of 6 scaled questions, 4 of which are forced-choice questions scored from 0 to 1 and the other 2 are closed-ended questions with multiple-choice responses scored from 0 to 3. A total score <7 points indicates behavioral addiction, while a score ≥7 points indicates pharmacological addiction. Dependence can also be described as mild (0–3 points), moderate (4–6 points) and severe (>6 points).[3,13] Both tests have been recommended by the National Health Fund for the implementation of tobacco-related disease prevention programs.[3]

The statistical analysis used Pearson's χ^2 independence test to investigate the relationship between the 2 categorical variables. It is used to check the equivalence of groups or to compare the experimental distribution of a variable with its theoretical distribution.[14]

Results

The analysis of nicotine dependence of current cigarette smokers showed that individuals with behavioral addiction (82.6%) of a moderate degree (45.4%) are dominant in the study group. Severe (probably pharmacological) nicotine dependence concerned 17.5% of the respondents (Table 1).

Table 1. Assessment of the degree of nicotine addiction in the group of students surveyed using the Fagerström Test for Nicotine Dependence

Tabela 1. Ocena stopnia uzależnienia od nikotyny w grupie badanych studentów wg Testu Uzależnienia od Nikotyny Fagerströma

Type of dependence	Degree of nicotine dependence	Range of points	*n*	%
Probably behavioral dependence	mild dependence	0–3	53	37.1
	moderate dependence	4–6	65	45.4
Probably pharmacological dependence	severe dependence	7–10	25	17.5
Total			143	100.0

n – number of the analyzed characteristic in the sample.

The structure of answers to individual questions of the FTND, together with the scores obtained, are presented in Fig. 1–3. These data shows that a significant proportion of students smoke a cigarette quite soon after waking up. More than 1/5 of the respondents do it after 5 min, thereby obtaining as many as 3 points in the test, and another 2/5 after 6–30 min (2 points) – Fig. 1. More than 1/3 of the students felt the need to smoke even when lying ill in bed, as well as presented difficulty of refraining from smoking in places it is forbidden (Fig. 2). According to the data presented in Fig. 3, young adults smoke a quite large number of cigarettes a day. Over 0.5–1 packet of cigarettes (11–20 cigarettes) are smoked by 34.7% of respondents and more than 1 packet – by 33.3% of respondents.

The analysis of the influence of selected variables on the degree of tobacco dependence of the respondents is presented in Table 2. The distribution of the results indicates a slightly higher degree of tobacco dependence in

the group of men, people living in small towns and persons with lower self-assessment of health; however, statistical analysis has not confirmed the relationship with these variables ($p > 0.05$).

An analysis of the level of motivation to quit smoking (Fig. 4) shows that 63.6% of the young adults surveyed (n = 91) are highly motivated, while more than 1/3 (n = 52) are not sufficiently motivated to quit smoking.

The structure of responses to each question of the Test of Motivation for Ceasing Smoking is presented in Fig. 5. As can be seen from the data, the positive dimension of the individual factors that make up the motivation to quit smoking, which is expressed by giving a "yes" answer (1 point in the test), applies to 41–69.4% of respondents. The least conducive factor to quitting smoking is smoking of cigarettes by friends in the place of work/education,

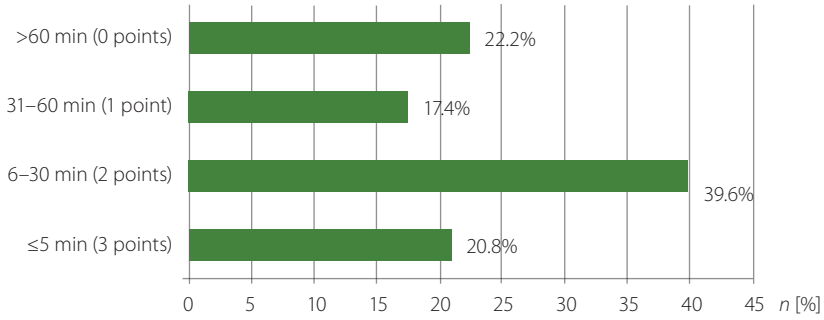

Fig. 1. The promptness of lighting a cigarette after waking up in the group of students surveyed using the Fagerström Test for Nicotine Dependence

Ryc. 1. Czas, który mija od przebudzenia do zapalenia pierwszego papierosa rano w grupie badanych studentów wg Testu Uzależnienia od Nikotyny Fagerströma

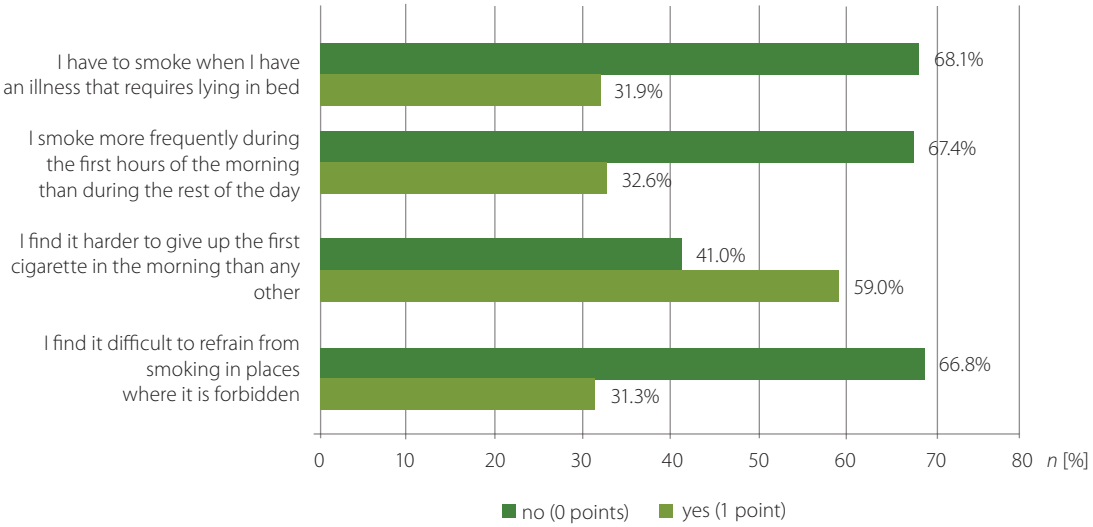

Fig. 2. The necessity of smoking cigarettes by the students surveyed using the Fagerström Test for Nicotine Dependence

Ryc. 2. Konieczność palenia papierosów przez badanych studentów wg Testu Uzależnienia od Nikotyny Fagerströma

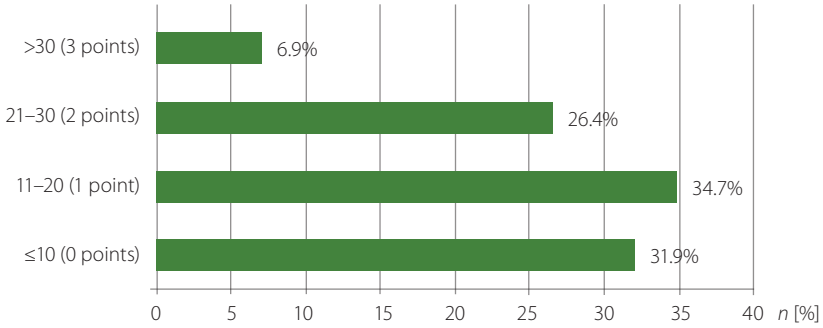

Fig. 3. The number of cigarettes smoked per day by the students surveyed using the Fagerström Test for Nicotine Dependence

Ryc. 3. Liczba papierosów wypalanych w ciągu dnia przez badanych studentów wg Testu Uzależnienia od Nikotyny Fagerströma

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Table 2. Degree of addiction to nicotine in relationship to selected socio-demographic factors and self-assessment of health

Tabela 2. Stopień uzależnienia od nikotyny a wybrane czynniki społeczno-demograficzne i samoocena zdrowia

Variable	Degree of nicotine dependence						Total	
	mild		moderate		severe			
	n	%	*n*	%	*n*	%	*n*	%
Age [years]								
19–22	24	30.0	43	53.8	13	16.2	80	100.0
≥23	29	46.0	22	34.9	12	19.1	63	100.0
$\chi^2 = 5.4$; $p = 0.069$*								
Sex								
women	24	42.9	25	44.6	7	12.5	56	100.0
men	29	33.3	40	46.0	18	20.7	87	100.0
$\chi^2 = 2.15$; $p = 0.341$*								
Place of residence								
big city	16	43.2	16	43.3	5	13.5	37	100.0
small town	19	31.1	27	44.3	15	24.6	61	100.0
rural area	18	40.0	22	48.9	5	11.1	45	100.0
$\chi^2 = 4.08$; $p = 0.395$*								
Self-assessment of health								
high	11	40.7	13	48.1	3	11.1	27	100.0
medium	35	40.2	36	41.4	16	18.4	87	100.0
low	7	24.1	16	55.2	6	20.7	29	100.0
$\chi^2 = 2.45$; $p = 0.653$*								

* A statistically insignificant result.

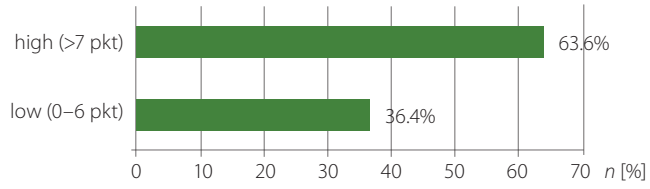

Fig. 4. The level of motivation to quit smoking in the group of students surveyed using the Test of Motivation for Ceasing Smoking

Ryc. 4. Poziom motywacji do zaprzestania palenia tytoniu w grupie badanych studentów wg Testu Motywacji do Zaprzestania Palenia

which affects 59% of respondents. The most conducive factors, on the other hand, are the awareness of the difficulties encountered when trying to quit smoking (69.4%) and the possibility of obtaining support from people closest to you at that time (69.4%).

Data in Table 3 indicates that age, gender, place of residence, and self-assessment of health were unrelated to the level of motivation to quit smoking ($p > 0.05$), although there is a trend towards lower motivation among people living in small towns and cities, and the level of statistical significance was close to the criterion value ($p = 0.051$).

An analysis of the relationship between the level of dependence and the level of motivation to quit smoking among the examined young adults revealed a statistically significant dependence ($p < 0.05$). Respondents with higher degrees of addiction demonstrate a lower level of motivation to quit smoking (Table 4).

Table 3. The level of motivation to quit smoking in relationship to selected socio-demographic factors and self-assessment of health

Tabela 3. Poziom motywacji do rzucenia palenia a wybrane czynniki społeczno-demograficzne i samoocena zdrowia

Variable	Motivation to quit smoking				Total	
	low		high			
	n	%	*n*	%	*n*	%
Age [years]						
19–22	29	36.3	51	63.7	80	100.0
≥23	23	36.5	40	63.5	63	100.0
$\chi^2 = 0.0006$; $p = 0.98$*						
Sex						
women	20	35.7	36	64.3	56	100.0
men	32	36.8	55	63.2	87	100.0
$\chi^2 = 0.02$; $p = 0.89$*						
Place of residence						
big city	11	29.7	26	70.3	37	100.0
small town	29	47.5	32	52.5	61	100.0
rural area	12	26.7	33	73.3	45	100.0
$\chi^2 = 5.93$; $p = 0.051$*						
Self-assessment of health						
high	9	33.3	18	66.7	27	100.0
medium	29	33.3	58	66.7	87	100.0
low	14	48.3	15	51.7	29	100.0
$\chi^2 = 2.21$; $p = 0.332$*						

* A statistically insignificant result.

Table 4. Degree of addiction to nicotine and the level of motivation to quit smoking

Tabela 4. Stopień uzależnienia od nikotyny a poziom motywacji do rzucenia palenia

Level of motivation to quit smoking	Degree of nicotine dependence						Statistics
	mild		moderate		severe		
	n	%	*n*	%	*n*	%	
Niski	12	22.6	28	43.1	12	48.0	$\chi^2 = 6.901$ $p = 0.03$*
Wysoki	41	77.4	37	56.9	13	52.0	
Ogółem	53	100.0	65	100.0	25	100.0	

* A statistically insignificant result.

Discussion

As shown by own research, most young adults demonstrated behavioral addiction traits (82.6%), especially of moderate degree (45.4%). This dependence is either learned or psychosocially generated behavior, and pharmacological cessation therapy, including nicotine replacements, is unlikely to be needed.[10] Severe nicotine dependence affected 17.5% of the surveyed students, which, given the age of the respondents, is a quite large part of the group. These individuals have scored ≥7, which is likely to indicate a pharmacological addiction caused by a physical need for nicotine.[3,10,13]

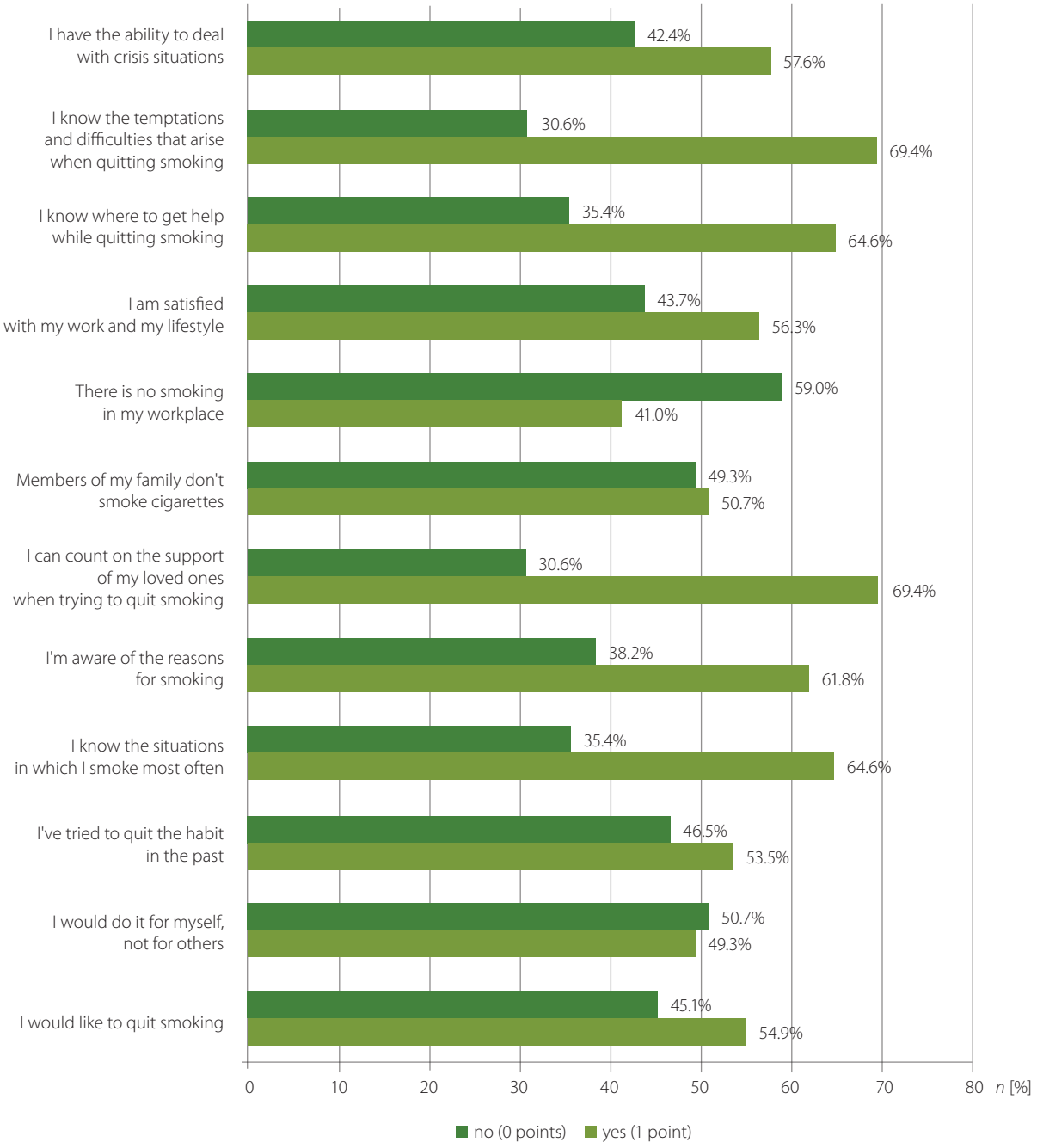

Fig. 5. Detailed analysis of factors affecting the level of motivation to quit smoking among the students surveyed using the Test of Motivation for Ceasing Smoking

Ryc. 5. Szczegółowa analiza czynników wpływających na poziom motywacji do zaprzestania palenia tytoniu wśród badanych studentów wg Testu Motywacji do Zaprzestania Palenia

Similar studies were conducted by Sawicka et al., except that the study group consisted of 103 cigarette smokers aged 25–70 with an average addiction duration of 24.1 years. Pharmacological dependence concerned a much larger part of the respondents, namely 39.8%.[15] It can therefore be assumed that the consequences of smoking, including the power of addiction, will increase in the group of young adults (with much lower average smoking period – 3.5 years) unless tobacco-related habits are changed. In another study by the author of this paper, a severe nicotine dependence concerned only 2% of the examined young adults, but these were only female students of specific faculties – pedagogy and nursing.[16]

The most sensitive indicators of addiction considered in FTND are the time of smoking first cigarette after waking up and the number of cigarettes smoked per day.[3,10,17] The results showed that 60.4% of students in the study group smoke the first cigarette up to 30 min after waking up, 20.8% – within 5 min and 39.6% – within 6–30 min. This indicates the occurrence of nicotine craving symp-

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toms in the subjects, which they cannot cope with without smoking after a period of night abstinence.[10] A study published in the *Global Adult Tobacco Survey* (GATS) conducted in Poland in 2009–2010 on 7,480 adult Poles aged 15–60+ showed that a similar proportion (60.1%) of respondents smoked their first cigarette within the first 30 min after waking up (including slightly more – 22.9% – within the first 5 min).[17] Among people surveyed by Sawicka et al., even more persons (73.8%) smoked their first cigarette within 30 min of waking up (including 9.7% within 5 min).[15] On the other hand, in a similar age group of young adults in the GATS survey (20–29 years), 47% of respondents lit their first cigarette within 30 min of waking up (including 11.6% within the first 5 min).[17] The difference in results may be related to the participation of 19-year-olds in own research. In GATS surveys, as many as 31.5% of people aged 15–19 years declared smoking first cigarette within 5 min of waking up.[17]

Another important indicator of nicotine addiction is the number of cigarettes smoked daily. In the study group, 34.7% of students smoked 11–20 cigarettes a day and this is a lower percentage compared to the GATS survey results[17] – both for the entire study group (42.4%) and for a similar age group (20–29 years old), where 10–19 cigarettes a day were smoked by 43.3% of respondents. A particularly high probability that a smoker is a nicotine addict is associated with smoking >30 cigarettes per day.[10] This indicator was worse among the surveyed students (6.9%) than in young adults in the GATS survey (3.2%).[17]

The most important factor for giving up smoking is the right motivation. People without a strong conviction to quit most often return to the habit, while people with a strong motivation are able to quit and maintain abstinence.[10,12] Population-based educational and therapeutic programs developed in the 1990s to motivate and support smokers in their decision to stop smoking have resulted in a significant reduction in the number of smokers. The changes in attitudes towards smoking have been followed by an improvement in the health of Polish society.[3] In the surveyed group of young adults, 63.6% presented a high level of motivation, while the others (36.4%) did not have enough determination to quit the addiction. A particularly unfavorable factor in building motivation was smoking of cigarettes by people around the respondents (in the work/study environment), which affected 59% of the study group. In the study by Sawicka et al., the motivation to quit smoking was expressed by a smaller group of respondents – 59.2%.[15] A comparison of the structure of responses describing motivation to stop smoking obtained in the own research with those developed by Sawicka et al.[15] shows some differences. The students described in this paper were more aware of the causes of smoking (61.8% vs 55.4%), of where to seek help when quitting (64.6% vs 54.4%), of the difficulties of quitting (69.4% vs 38.8%), and of methods of coping with crisis situations (57.6% vs 32%). They were also more satisfied with their lifestyle (56.3% vs 33%). On the other hand, the willingness to quit smoking was much lower (54.9% vs 78.6%), fewer young adults declared that they wanted to make this decision for themselves and not for others (49.3% vs 73.8%), and they have been less likely to receive support from their loved ones (69.4% vs 82.5%). Such data distribution may be the result of a difference in the level of education between the studied groups (to the detriment of the group studied by Sawicka et al.), which could have a significant impact on the level of knowledge and awareness associated with smoking and the search for professional help. On the other hand, the higher average age in the reference group[15] and the prevalence of chronic diseases in some of the respondents may have had a strengthening effect on their willingness to quit smoking and make this decision for themselves, especially as half of the respondents in the study by Sawicka et al. indicated concern for their own health as the main motivating factor to quit smoking.

In conclusion, attention should be paid to the need for comprehensive intervention and prevention measures among young adults to enable addicts to quit their addiction as early as possible. The assessment of the power of dependence and the identification of factors influencing motivation to quit should be the basis for intervention. Given the research reports indicating a tendency to co-occurrence of risky behaviors among young people[18,19] and the increase in this phenomenon with age,[18] it can be assumed that quitting smoking not only eliminates the adverse effects of tobacco smoke on the body but also leads to a reduction in other risky behaviors. The occurrence of a group of risky behaviors in the studied group of students is confirmed by the results presented in another work by the authors.[20] They showed that cigarette smoking coexisted with alcohol abuse and higher body mass index (BMI).

Conclusions

Among the examined young adults, the most frequently observed features were those of behavioral dependence. What is worrying, however, are quite numerous cases of severe dependence and low motivation to quit smoking.

The main features of nicotine addiction in the study group are the need to smoke right after waking up and the large number of cigarettes smoked daily.

The level of motivation to quit smoking depends on the degree of nicotine addiction.

Improvement in the health of Poles and protection against tobacco-dependent diseases indicates the need for preventive measures to be taken at the earliest possible stages of human life.

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