

# Who is happier: smoker or non-smoker? Smoking in medical students from the perspective of positive psychology

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**Abstract. – OBJECTIVE:** The aim of this study was to analyze the correlation of nicotine dependence with perceived happiness and experienced emotions in three groups, namely non-smokers, smokers, and those who quit smoking.

**PATIENTS AND METHODS:** The total of 552 Poznan University of Medical Sciences students aged  $21.84 \pm 3.95$  (women: 83.3%, men: 16.7%) participated in this study. They were asked to fill out 4 questionnaires. Two were originally designed by the authors of this paper – one asked about some demographic information and the other described cigarette smoking. Happiness and its dimensions were measured using Fordyce's Happiness Measure and the Positive and Negative Affect Schedule (PANAS).

**RESULTS:** The obtained results point out some significant differences between smokers, non-smokers, and those who quit smoking as to the levels of negative affect with respects to its two dimensions: Unpleasant and Frustrated. Smokers were characterized by a higher level of a negative affect than non-smokers, as well as higher scores for the Unpleasant and Frustrated dimensions compared to non-smokers and those who quit smoking. As far as the positive affect of smokers and those who quit smoking is concerned, a significant difference was observed for 5 dimensions: Interested, Inspired, Attentive, Determined and Active.

**CONCLUSIONS:** The findings of this paper can help us understand better the nicotine-dependent population in the context of positive psychology, and provide us with some basic information helpful in designing preventive programmes for nicotine addicts.

*Key Words:*

Nicotine, Stress, Depression, Quality of life.

## Introduction

Although it is commonly known to be harmful, smoking is still a grave problem around the world. The World Health Organization statistics

show that there are more than 1 billion smokers worldwide and roughly 6 million deaths a year caused by smoking<sup>1</sup>.

Apart from the commonly known social risk factors behind smoking such as poverty, low education, affordability of cigarettes or peer influence, individual psychological health factors may play a key role in the development of the addiction<sup>2-5</sup>. The variety of human health studies and the analysis of health factors determined by one's personality, background, culture or family still do not allow us to understand all the attitudes towards health and motives behind changing one's health behaviors which form and maintain our general well-being<sup>6</sup>. Positive psychology points out new ways of evaluating the correlation between health and addiction by highlighting the importance of positive factors. Thus, it is crucial to examine health-improving factors. This work is part of a wider research on the application of positive psychology to studies on perceived happiness and experienced emotions of nicotine addicts<sup>7</sup>. It has been proved that expressed happiness impacts the length of human life. The fact of experiencing happiness, as well as our attitude towards the world around us, affects the way we think about ourselves and the world, what decisions we make, if we feel authentic or not and if we take care of our health<sup>8</sup>. The affective system characteristics differ depending on the nervous system. Positive emotions may be evoked in different areas of the brain than the negative ones, and the mere reduction in negative emotions does not automatically imply that the positive ones will develop. That is why it should be expected that the studies on the correlation between positive emotions and health will result in revealing dependencies, mechanisms and intervention methods other than the studies devoted to negative emotions only. People are still unaware of many emotions or behavior patterns or fail to understand them; thus, in a way, supporting

the defensive mechanisms triggered subconsciously. In addition, such mechanisms, exemplified by illusion or denial, are particularly important because they allow individuals to get rid of any sense of guilt or responsibility for their actions, as well as to overcome fear. The traditional focus on the negative aspects of being addicted blocks the modern way of concentrating on positive aspects. Smoking is not only about emotional distance and all that builds one's attitude to what is important in life. It is also an approach to life, other people and oneself based on destruction. Both in general population and psychiatric patients, a correlation between addiction to nicotine and suicidal attempts was observed<sup>9,10</sup>. Some researchers<sup>11,12</sup> claim that smoking cigarettes and other addictions, like many other risky behaviors, are initiated mainly among teenagers and young adults. Finding answers to some fundamental questions about the correlation between positive emotions and smoking can open new possibilities as far as preventive measures and the cessation of smoking early in life are concerned. Promoting a healthy lifestyle is particularly a duty of medical professionals such as doctors, nurses or physiotherapists. The group also develops their health habits in adolescence, and then as young adults. With this taken into account, this work aimed to evaluate to what extent tobacco smoking is common among medical students. The differences concerning perceived happiness, positive affect and negative affect were analyzed at the same time in three groups, i.e., smokers, non-smokers and those who quit smoking. The study addresses one of the issues not dealt with so far in the literature. It connects the decisions about smoking and the acquired knowledge about health-improving behaviors in the group responsible for promoting a healthy lifestyle in the general population.

## Patients and Methods

### Study Population

552 students of the Poznan University of Medical Sciences aged  $21,8 \pm 3,9$  (19-49) were included in the study, 83.3% of whom were women. All participants gave their consent before entering the study. The characteristics of the study population were presented in Table I.

### Methods

Two original questionnaires designed by the authors of the paper were used: one to gather the subjects' demographic details such as age, sex,

place of residence and educational background, and the other to measure the subjects' attitude towards smoking. The subjects were also asked to what extent the parameters of positive psychology characterized their behavior. As regards cigarette smoking, the subjects were asked how many cigarettes a day they smoked, when was the first time they smoked a cigarette, how long they had been smoking, how many times they tried to quit smoking, etc. The major variables measured concerning positive psychology were: perceived happiness and positive and negative affects. Two tests were applied to compare the three study groups, i.e., smokers, non-smokers and those who quit smoking. To evaluate perceived happiness, Fordyce's Happiness Measure was used. It consists of two parts: the first one measures a person's perceived happiness on an 11-point "happiness vs. unhappiness scale" using descriptions given 0 to 10 scores. The second part measures the percentage of time when the respondents feel happy, unhappy, or neutral<sup>13</sup>. For the assessment of emotions, the Positive and Negative Affect Schedule (PANAS) by David Watson and Lee Anny Clark was used in the Polish version<sup>14,15</sup>. The scale includes 10 adjectives describing negative emotions (Irritable, Distressed, Ashamed, Upset, Nervous, Guilty, Scared, Unpleasant, Frustrated, Afraid) and 10 adjectives describing positive emotions (Interested, Excited, Inspired, Strong, Attentive, Determined, Alert, Enthusiastic, Active, Proud).

### Statistical Analysis

The following two-way interactions were estimated: smoking score vs. perceived happiness, smoking score vs. positive and negative affect. The findings were presented for the whole sample (Tables I-III). All examined variables were not normally distributed. That is why the variables were ordered on an ordinal scale, and the non-parametric Kruskal-Wallis test was used for statistical analysis. The average ranks (M), as well as the  $\chi^2$  and  $p$  test scores, were shown in Tables III and IV. In the end, comparative analysis among smokers, non-smokers, and those who quit smoking over two years ago was performed concerning their perceived happiness, positive and negative affect and their dimensions. All analyses were performed using statistical software SPSS 24 (IBM, Armonk, NY, USA). The research project was approved by the Bioethics Committee of the Poznan University of Medical Sciences (resolution No. 94/16).

**Table I.** Study population characteristics.

Variables	Total No.=552	Non-smokers No.=386 (70%)	Smokers No.=101 (18%)	Used to smoke No.=65 (12%)
<b>Age (years)</b>				
Arithmetic mean±SD (range)	21.84±3.9 (19-19)	21.81±4.01 (19-49)	21.39±2.56 (19-35)	22.75±5.1 (19-46)
<b>Sex (% of the population)</b>				
Women	83.3	84.5	80.2	81.5
<b>Place of residence (% of the population)</b>				
Village	22.5	21.1	21.8	13.8
Town up to 20 K residents	15.4	16.3	11.9	15.4
Town/city from 20 to 100 K residents	18.8	20.7	13.9	15.4
City of over 100 K residents	43.3	41.9	51.4	55.4

## Results

The results were presented in Tables I-IV. Table I presents the characteristics of the study population. 552 medical students aged  $21.8 \pm 3.9$  (19-49) were included in the study, 83.3% of whom were women. The analysis of the place of residence shows that the majority of the study population lives in cities of over 100 thousand residents – as many as 43.3% subjects, and the subjects living in towns of up to 20 thousand residents are the smallest group of the population (15.4%). 55.4% of those who quit smoking and 51.4% of smokers come from cities of over 100 thousand residents. Table II describes cigarette smoking among study subjects. The majority of the subjects constituting as many as 70% of the population were non-smokers. Smokers made 18% of the population, and 12% were those who

quit smoking. Like for the general population, women were the dominant sex (ca. 80%) in all these groups. The first time the subjects smoked a cigarette was at the average age of  $15.4 \pm 2.6$  (3-22) years. The declared age of nicotine initiation did not differ for smokers and those who quit smoking ( $15.5 \pm 2.2$  vs.  $15.3 \pm 3.0$  years, respectively). Smokers declared they had started smoking at the age of  $14.9 \pm 5.5$  years. The majority of 91% of subjects smoked less than 10 cigarettes a day, 8% smoked from 10 to 19 cigarettes daily, and 1 person smoked more than 20 cigarettes a day. Those who quit smoking had smoked approximately  $4.78 \pm 5.5$  years, and they did not smoke approximately  $2.6 \pm 2.9$  years. Smokers said they were trying to quit smoking many times (even 50 times). On average, these were  $1.98 \pm 3.9$  vs.  $2.21 \pm 3.95$  attempts for smokers and those who quit smoking, respectively.

**Table II.** Cigarette smoking among subjects.

Variables	Total No.=552	Non-smokers No.=386	Smokers No.=101	Used to smoke No.=65
<b>When was the first time you smoked a cigarette?</b>				
Arithmetic mean±SD (range)	15.44±2.57 (3-22)	–	15.51±2.24 (8-22)	15.35±3.01 (3-20)
<b>When did you start smoking cigarettes?</b>				
Arithmetic mean±SD (range)	14.89±5.50 (0.5-25)	–	14.89±5.50 (0.5-25)	–
<b>Number of cigarettes a day (% of the population)</b>				
Less than 10 cigarettes	16.5	–	90.1	–
10 - 19 cigarettes	1.4	–	7.9	–
20 - 30 cigarettes	0.2	–	1.0	–
<b>Years of smoking</b>				
Arithmetic mean±SD (range)	4.78±5.48 (0.5-20)	–	–	4.78±5.48 (0.5-20)
<b>Years of not smoking</b>				
Arithmetic mean±SD (range)	2.62±2.97 (0-15)	–	–	2.62±2.97 (0-15)
<b>The frequency of quitting (how many times)</b>				
Arithmetic mean±SD (range)	2.07±5.00 (0-50)	–	1.98±5.63 (0-50)	2.21±3.95 (0-50)

**Table III.** Perceived happiness, positive and negative affects, as well as their dimensions for smokers, non-smokers, and those who quit smoking (non-parametric Kruskal-Wallis test was used).

Variable	Cigarette smoking			$\chi^2(p)$
	Smokers (No. = 101)	Non-smokers (No.=386)	Used to smoke (No. = 65)	
	<i>M</i>	<i>M</i>	<i>M</i>	
Perceived happiness	294.35	267.89	287.94	2.87 (0.238)
Happy	250.02	280.95	273.67	3.03 (0.219)
Unhappy	299.80	266.10	281.49	3.84 (0.147)
Neutral	290.83	271.31	264.08	1.51 (0.471)
Positive affect	267.10	272.71	296.82	1.54 (0.463)
Interested	265.05	273.59	286.18	0.76 (0.685)
Excited	281.96	268.76	284.27	1.00 (0.608)
Inspired	270.96	267.96	314.15	5.15 (0.076)
Strong	267.12	272.79	292.01	1.12 (0.572)
Attentive	273.98	275.52	264.95	0.26 (0.876)
Determined	255.21	275.06	275.90	1.42 (0.492)
Alert	255.07	280.49	256.02	3.13 (0.209)
Enthusiastic	271.13	271.59	292.93	1.11 (0.575)
Active	262.58	274.35	285.48	0.92 (0.632)
Proud	273.65	257.23	284.04	2.35 (0.308)
Negative affect	310.45 <sup>b</sup>	266.14 <sup>a</sup>	268.50 <sup>a,b</sup>	6.35 (0.042)
Irritable	304.79	267.40	269.78	5.29 (0.071)
Distressed	286.14	270.33	268.56	1.02 (0.601)
Ashamed	281.48	271.88	266.50	0.74 (0.690)
Upset	285.86	269.22	279.74	1.08 (0.583)
Nervous	297.83	268.50	269.69	3.00 (0.223)
Guilty	288.60	267.18	287.61	4.20 (0.123)
Scared	273.71	272.09	285.87	0.63 (0.729)
Unpleasant	307.27 <sup>b</sup>	266.21 <sup>a</sup>	255.49 <sup>a</sup>	10.83 (0.004)
Frustrated	307.40 <sup>b</sup>	263.51 <sup>a</sup>	262.57 <sup>a</sup>	8.21 (0.016)
Afraid	283.36	258.79	277.02	3.29 (0.193)

<sup>a,b</sup>: statistically significant differences.

Table III presents the scores of the Happiness Measure and PANAS tests. The latter measures both the positive and negative affects, as well as their dimensions for smokers, non-smokers, and those who quit smoking. No significant differences between the groups were observed concerning how often they felt happy, unhappy or neutral. However, some significant differences between smokers, non-smokers, and those who quit smoking were observed as to the levels of negative affect with respects to its two dimensions: Unpleasant and Frustrated. Smokers were characterized by a higher level of a negative affect than non-smokers, as well as higher scores for the Unpleasant and Frustrated dimensions compared to non-smokers and those who quit smoking. Table IV shows the results for both the Happiness Measure and PANAS in the groups of

smokers, those who quit smoking just recently (up to 2 years), and those who quit smoking over 2 years ago. The obtained results indicate some statistically significant differences between smokers, those who quit smoking up to 2 years ago and those who quit smoking over 2 years ago in the levels of positive affect with respects to its 5 dimensions: Interested, Inspired, Attentive, Determined, and Active. Smokers and those who quit smoking just recently were characterized by lower levels of positive affect compared to those who quit smoking over 2 years ago. The same differences were observed for the following dimensions: Interested, Inspired, Determined, and Active. Attentive is an exception because the subjects who quit smoking just recently revealed markedly lower levels of attention than those who quit

**Table IV.** Perceived happiness, positive and negative affects, as well as their dimensions among smokers, those who quit smoking up to 2 years ago, and those who quit smoking over 2 years ago.

Non-parametric Kruskal-Wallis test was used				
Variable	Smokers (No. = 101)	Quit smoking up to 2 years ago (No.=33)	Quit smoking over to 2 years ago (No. = 26)	$\chi^2$ (p)
	<i>M</i>	<i>M</i>	<i>M</i>	
Perceived happiness	80.53	86.92	66.17	3.36 (0.186)
Happy	77.30	74.67	94.02	3.25 (0.197)
Unhappy	79.81	83.59	69.72	1.45 (0.485)
Neutral	82.83	77.95	65.22	3.07 (0.215)
Positive affect	76.75 <sup>a</sup>	69.48 <sup>a</sup>	105.85 <sup>b</sup>	10.43 (0.005)
Interested	78.17 <sup>a</sup>	69.15 <sup>a</sup>	100.81 <sup>b</sup>	8.02 (0.018)
Excited	79.09	76.27	88.25	1.17 (0.558)
Inspired	75.43 <sup>a</sup>	71.82 <sup>a</sup>	107.98 <sup>b</sup>	12.29 (0.002)
Strong	77.33	74.33	97.46	4.89 (0.087)
Attentive	81.06 <sup>a,b</sup>	63.08 <sup>a</sup>	97.42 <sup>b</sup>	8.77 (0.012)
Determined	78.33 <sup>a</sup>	67.12 <sup>a</sup>	102.79 <sup>b</sup>	9.59 (0.008)
Alert	79.43	72.26	88.96	2.11 (0.349)
Enthusiastic	77.67	79.24	89.92	1.57 (0.455)
Active	77.47 <sup>a</sup>	71.24 <sup>a</sup>	100.87 <sup>b</sup>	7.34 (0.025)
Proud	76.90	79.73	83.14	0.43 (0.805)
Negative affect	83.79	80.70	64.54	3.63 (0.163)
Irritable	83.33	80.27	66.85	3.00 (0.223)
Distressed	80.26	76.91	76.76	0.24 (0.885)
Ashamed	80.60	77.32	74.88	0.66 (0.718)
Upset	80.47	85.09	71.75	1.34 (0.512)
Nervous	82.34	77.06	74.75	0.78 (0.677)
Guilty	80.06	81.12	78.37	0.09 (0.956)
Scared	78.46	85.08	79.48	0.75 (0.687)
Unpleasant	85.15	68.77	74.44	5.42 (0.066)
Frustrated	84.68 <sup>b</sup>	81.09 <sup>a,b</sup>	60.62 <sup>a</sup>	6.69 (0.035)
Afraid	79.71	87.18	65.92	4.12 (0.127)

<sup>a,b</sup>: statistically significant differences.

smoking earlier. As for smokers, no significant differences could be seen in this aspect. In the case of negative affect, a statistically significant difference occurred concerning the Frustrated dimension, where smokers turned out to be remarkably more frustrated compared to those who quit smoking over 2 years ago.

## Discussion

Since the 1960s, the harmfulness of smoking tobacco has been stressed. Tobacco smoke contains more than 400 various toxic substances, including carcinogens. Tobacco smoking has been undeniably considered to be the factor

responsible for numerous diseases and disorders, including cognitive decline<sup>16-19</sup>. Although e-cigarettes are advertised as a healthier option, many physical side-effects, including increased lung cancer risk, have been described. Four years after switching from traditional cigarettes to e-cigarettes, health benefits were marginal and nonsignificant<sup>20,21</sup>. Fighting against nicotine addiction is difficult because apart from being a physical dependence, it is also a psychic addiction. Studies on tobacco usage underline that the majority of smokers smoke in situations they consider to be emotionally difficult. Smoking a cigarette calms them down and reduces the negative affect such as anger, sadness or anxiety<sup>22-24</sup>. According to Shiffman et al<sup>22</sup>, smoking as the



way to regulate affect is the most common motive among nicotine-dependent individuals. In this work, a group of medical students was analyzed in the context of smoking and positive psychology, i.e., concerning both positive and negative emotions. Even though owing to the knowledge they gain as medical students, the group should be more aware of the harmfulness of tobacco smoking compared to other groups of similar age; it was observed that the percentage of smokers among medical students is similar to the percentage of smokers in the general population. Krentzman's studies<sup>25</sup> performed in a similar age group showed that in the general population almost 20% of young people declared smoking, 12% ceased smoking, and as many as 80% smokers started smoking before they were 18. The results obtained in this work also show that children aged 15 already lighted their first cigarette, and those who managed to quit smoking had smoked on average for 5 years. Moreover, almost all smokers declared that smoking is for them just a temporary experience and that one day they are going to stop smoking<sup>26</sup>. This kind of thinking may lead to being emotionally disengaged from one's smoking habits; this was confirmed for example in the studies by Kassel et al<sup>27</sup>. The authors measured how nicotine influences both negative and positive affect in adolescent smokers aged 15-18. Their findings revealed that smoking teenagers experienced reduced positive and negative affects and that the lowering of negative affect was directly associated with nicotine dependence. According to Kassel et al<sup>27</sup>, in teenagers, emotions may drive their behavior as smokers. Another study analyzes positive emotions concerning sex. For men, higher happiness ratings were correlated with less smoking. To the contrary, in women, higher happiness ratings meant more smoking<sup>28</sup>.

When looking at the present study from the perspective of positive psychology, it indicates that smokers, non-smokers, and those who quit smoking generally feel similarly happy, unhappy or neutral. It changes, however, when particular emotions are analyzed. Smokers are characterized by a higher level of a negative affect than non-smokers, as well as higher scores for the Unpleasant and Frustrated dimensions compared to non-smokers and those who quit smoking. The thorough analysis points out some significant differences between smokers, those who quit smoking up to 2 years ago, and those who quit smoking over 2 years ago in the levels of

positive affect with respects to its 5 dimensions: Interested, Inspired, Attentive, Determined, and Active. Smokers and those who quit smoking just recently are characterized by lower levels of positive affect than those who quit smoking over 2 years ago. The same differences were observed for the following dimensions: Interested, Inspired, Determined, and Active. Positive emotions are likely to increase our attention. That may be why those who quit smoking are more aware of their physical and social environment compared to smokers. This enhanced attention makes them more open to new ideas and undertakings and more creative<sup>29</sup>. Most probably, individuals experiencing more positive emotions will be less vulnerable to addiction and/or more likely to overcome it<sup>25</sup>. An increase in positive emotions after smoking cessation was observed in a study carried out among parents. Perceived happiness was significantly higher in parents who ceased smoking compared to those who continued smoking<sup>30</sup>. In the present work, in the case of emotions considered negative, a marked difference occurred concerning the Frustrated dimension, where smokers turned out to be more frustrated than those who quit smoking over 2 years ago. The dimensions of both positive and negative affect are associated with the behavioral inhibition and activation systems. According to Fredrickson et al<sup>31</sup> the positive affect includes emotions which act as motives and kind of affective rewards for goal-directed behaviors leading to actions and increased sense of efficiency<sup>31</sup>. On the other hand, a low level of positive emotions co-occurs with depression. However, Brzozowski et al<sup>14</sup> claim that the emotions of negative affect motivate us to be more cautious, careful, and they hinder action. Thus, to efficiently deal with smoking, one may be required to accept both negative and positive emotions. Larsen et al<sup>32</sup> proved that those who express little or no emotions when in bad trouble usually end up less healthy compared to more emotionally expressive individuals. The findings of Egervari et al<sup>33</sup> showed that a low depression score allowed to predict efficient smoking cessation. The same study proved that low positive and high negative affect predict low indicators of abstinence among smokers who try to quit. Kahler et al<sup>34</sup> noticed that positive psychology, when applied for psychotherapy, may both increase the level of positive affect and decrease the level of negative affect. This implies that positive psychology may be useful as far as counseling on behavioral smoking is concerned.

## Conclusions

Positive psychology points out new ways of evaluating the correlation between health and addiction highlighting the importance of factors related to emotions that are considered positive and proved good for health as a whole. Sin et al<sup>35</sup> define a positive intervention as “an intervention, therapy, or activity primarily aimed at increasing positive feelings, positive behaviors, or positive cognitions, as opposed to ameliorating pathology or fixing negative thoughts or maladaptive behavior patterns.”

## Conflict of Interests

The authors declare that they have no conflict of interest.

## References

- 1) WORLD HEALTH ORGANIZATION. WHO report on the global tobacco epidemic, 2015: Raising taxes on tobacco. 2015.
- 2) HOLLIDAY E, GOULD TJ. Nicotine, adolescence, and stress: a review of how stress can modulate the negative consequences of adolescent nicotine abuse. *Neurosci Biobehav Rev* 2016; 65: 173-184.
- 3) GALÉRA C, SALLA J, MONTAGNI I, HANNE-POUJADE S, SALAMON R, GRONDIN O, GUICHARD E, BOUVARD MP, TZOURIO C, MICHEL G. Stress, attention deficit hyperactivity disorder (ADHD) symptoms and tobacco smoking: the i-Share study. *Eur Psychiatry* 2017; 45: 221-226.
- 4) MYKLETUN A, OVERLAND S, AARØ LE, LIABØ H-M, STEWART R. Smoking in relation to anxiety and depression: evidence from a large population survey: the HUNT study. *Eur Psychiatry* 2008; 23: 77-84.
- 5) ABRAMOVITCH A, PIZZAGALLI DA, GELLER DA, REUMAN L, WILHELM S. Cigarette smoking in obsessive-compulsive disorder and unaffected parents of OCD patients. *Eur Psychiatry* 2015; 30: 137-144.
- 6) GLANZ K, RIMER BK, VISWANATH K. Health behavior and health education: theory, research, and practice. Jossey-Bass, 2008.
- 7) MOJS E, STANISŁAWSKA-KUBIAK M, SKOMMER M, WÓJCIAK R. Palenie papierosów z perspektywy psychologii pozytywnej. *Przegl Lek* 2009; 66: 765-767.
- 8) SELIGMAN MEP (1942-), JANKOWSKI A (tłumacz). Prawdziwe szczęście: psychologia pozytywna a urzeczywistnienie naszych możliwości trwałego spełnienia. Media Rodzina, 2005.
- 9) BRONISCH T, HÖFLER M, LIEB R. Smoking predicts suicidality: findings from a prospective community study. *J Affect Disord* 2008; 108: 135-145.
- 10) HOOMAN S, ZAHRA H, SAFA M, HASSAN FM, REZA MM. Association between cigarette smoking and suicide in psychiatric inpatients. *Tob Induc Dis* 2013; 11:5.
- 11) FREEDMAN KS, NELSON NM, FELDMAN LL. Smoking initiation among young adults in the United States and Canada, 1998-2010: a systematic review. *Prev Chronic Dis* 2012; 9: E05.
- 12) VASYLYEVA A, GURKOVA A, RITKIS I. P-102 – Smoking and nicotine dependence among youth. *Eur Psychiatry* 2012; 27: 1.
- 13) FORDYCE M. The happiness measure: a sixty second index of emotional well-being and mental health. *Soc Indic Res* 1988; 20: 355-381.
- 14) BRZozowski P. Skala uczuć pozytywnych i negatywnych SUPIN. Polska adaptacja skali PANAS Davida Watsona i Lee Anny Clark. Podręcznik. Warszawa: pracownia testów psychologicznych polskiego towarzystwa psychologicznego, 2010.
- 15) WATSON D, CLARK LA, TELLEGEN A. Development and validation of brief measures of positive and negative affect: the PANAS scales. *J Pers Soc Psychol* 1988; 54: 1063-1070.
- 16) HEALTH NC FOR CDP AND HP (US) O ON S AND. THE HEALTH CONSEQUENCES OF SMOKING - 50 years of progress. Centers for Disease Control and Prevention (US), 2014.
- 17) SWAN GE, LESSOV-SCHLAGGAR CN. The effects of tobacco smoke and nicotine on cognition and the brain. *Neuropsychol Rev* 2007; 17: 259-273.
- 18) JHA P, RAMASUNDARAHETTIGE C, LANDSMAN V, ROSTRON B, THUN M, ANDERSON RN, McAFEE T, PETO R. 21st-century hazards of smoking and benefits of cessation in the United States. *N Engl J Med* 2013; 368: 341-350.
- 19) MEO SA, BASHIR S, ALMUBARAK Z, ALSUBAIE Y, ALMUTAWA H. Shisha smoking: impact on cognitive functions impairments in healthy adults. *Eur Rev Med Pharmacol Sci* 2017; 21: 5217-5222.
- 20) MEO SA, AL ASIRI SA. Effects of electronic cigarette smoking on human health. *Eur Rev Med Pharmacol Sci* 2014; 18: 3315-3319.
- 21) FLACCO ME, FERRANTE M, FIORE M, MARZUILLO C, LA VECCHIA C, GUALANO MR, LIGUORI G, FRAGASSI G, CARRADORI T, BRAVI F, SILIQUINI R, RICCIARDI W, VILLARI P, MANZOLI L. Cohort study of electronic cigarette use: safety and effectiveness after 4 years of follow-up. *Eur Rev Med Pharmacol Sci* 2019; 23: 402-412.
- 22) SHIFFMAN S. Assessing smoking patterns and motives. *J Consult Clin Psychol* 1993; 61: 732-742.
- 23) KASSEL JD, STROUD LR, PARONIS CA. Smoking, stress, and negative affect: correlation, causation, and context across stages of smoking. *Psychol Bull* 2003; 129: 270-304.
- 24) BRANDON TH, BAKER TB. The smoking consequences questionnaire: the subjective expected utility of smoking in college students. *Psychol Assess A J Consult Clin Psychol* 1991; 3: 484-491.
- 25) KRENTZMAN AR. Review of the application of positive psychology to substance use, addiction, and recovery research. *Psychol Addict Behav* 2013; 27: 151-165.

- 26) KAN K. Cigarette smoking and self-control. *J Health Econ* 2007; 26: 61-81.
- 27) KASSEL JD, EVATT DP, GREENSTEIN JE, WARDLE MC, YATES MC, VEILLEUX JC. The acute effects of nicotine on positive and negative affect in adolescent smokers. *J Abnorm Psychol* 2007; 116: 543-553.
- 28) DREHMER JE. Sex differences in the association between countries' smoking prevalence and happiness ratings. *Public Health* 2018; 160: 41-48.
- 29) ISEN AM. POSITIVE AFFECT AND DECISION MAKING. IN: LEWIS M, HAVILAND J, *Handbook of Emotions*, New York: Guilford Press, 2000; pp. 417-436.
- 30) DREHMER JE, HIPPLE B, OSSIP DJ, NABI-BURZA E, WINICKOFF JP. A cross-sectional study of happiness and smoking cessation among parents. *J Smok Cessat* 2017; 12: 6-14.
- 31) FREDRICKSON BL. The role of positive emotions in positive psychology. The broaden-and-build theory of positive emotions. *Am Psychol* 2001; 56: 218-226.
- 32) LARSEN JT, HEMENOVER SH, NORRIS CJ, CACIOPPO JT. Czerpanie korzyści z niepowodzenia: o zaletach współpobudzenia emocji pozytywnych i negatywnych. In: Czapiński J, editor. *Psychol. pozytywna*, Poznań: Wydawnictwo Naukowe PWN, 2008.
- 33) EGERVARI L, CSALA I, DOME P, FALUDI G, LAZARY J. P-21 - The role of depressive phenotype in smoking cessation. *Eur Psychiatry* 2012; 27: 1.
- 34) KAHLER CW, SPILLANE NS, DAY A, CLERKIN EM, PARKS A, LEVENTHAL AM, BROWN RA. Positive psychotherapy for smoking cessation: treatment development, feasibility, and preliminary results. *J Posit Psychol* 2014; 9: 19-29.
- 35) SIN NL, LYUBOMIRSKY S. Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: a practice-friendly meta-analysis. *J Clin Psychol* 2009; 65: 467-487.