

The characteristics of smokers attending preventive check-ups in family medicine practices in Slovenia

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Abstract - Tobacco usage is the most important preventable cause of death in Slovenia. Although negative effects of smoking are well known, less is known about smokers' lifestyle traits and other risk factors like psychological wellbeing, nutritional habits, physical activity and others. Our aim was to define characteristics in which healthy smokers and non-smokers between 30 and 65 years of age differ. A total of 747 people was included in cross sectional study. They were compared for various lifestyle traits. We found that, compared to non-smokers, smokers were statistically significantly less physically active, had worse nutritional habits, were younger, had lower HDL and had a higher risk for cardiovascular disease ($p < 0.05$, Nagelkerke $R^2 = 0.147$). The results of this study showed significant differences in age, physical activity, nutritional habits and cardiovascular disease risk between smokers and non-smokers. Therefore it would be of utmost importance for family practitioners and/or registered nurses to address this group with modified program focused on smoking cessation.

Keywords – characteristics, lifestyle traits, risk factors, smokers

I. INTRODUCTION

Tobacco usage is the most important preventable cause of death in the world. Yearly around 6 millions of people die from diseases related to smoking. [1,2] Nearly half of all smokers die from diseases related to smoking. Smokers die approximately 10 years earlier than their non-smoking counterparts do. [3,4] In Slovenia 3600 people, about 10 daily, die every year due to diseases related to smoking. One quarter of them, die before 60 years of age. [5]

In Slovenia 24.0% of population between 15 and 64 years of age are smokers, 22.6% of population are ex-smokers and 52.9% of population are non-smokers. [6] Compared to other countries of European Union, Slovenia has lower share of smokers between adult populations. [7]

Share of smokers differ statistically based on sex, age, level of education, activity status, socioeconomic status and household type. Share of smokers is bigger in categories of male sex, age between 25 – 34 years, lower level of education,

unemployment, lower socioeconomic status and living alone. [8]

Unhealthy lifestyle choices tend to cluster. Studies show, that smokers have a higher intake of alcoholic beverages, a lower consumption of balanced diet (fruit and vegetable consumption and dietary fat intake) and are less physically active. [9-11] Poor diet, physical inactivity and smoking are major contributors to the burden of chronic disease. [12]

In 2011 Slovenia started establishing the model practices in which family medicine physician works with practice nurse with full time employment (FTE) and registered nurse with 0.5 FTE. Registered nurse provides preventive activities, health education, health promotion and care for stable chronic patients. Since 2015 more than half of all family medicine practices were model practices and in 2020 the number is around 90%. [13]

Smokers' lifestyle traits and other risk factors like psychological wellbeing, nutritional habits, physical activity and others have not been well researched.

In our study, we aimed to define characteristics in which healthy smokers and non-smokers between 30 and 65 years of age differ.

II. MATERIAL AND METHODS

This was a cross sectional study, collecting data in 2019 in 30 family medicine practices all over Slovenia. It was a part of a larger study described elsewhere. [14] The sampling was purposive, but scattered across the whole of Slovenia.

The participants were comprised of people who came to family medicine practitioners for a preventive check-up. Their participation in the study was voluntary, and informed consent was provided.

Inclusion criteria were age between 30-65 and informed consent for participation in the study.

Exclusion criteria were age less than 30 or above 65 years, an inability to participate in the study and present chronic disease.

During the preventive check-up, the following data were collected: medical history of acquired and congenital risk factors for chronic diseases, nutritional history, data of physical activity, smoking status, drinking status, perception of stress, signs of depression, social health determinants, body mass index (BMI), blood pressure values, blood sugar and lipidogram values and cardiovascular risk.

For assessing the health-related quality of life (HRQOL) we used the EQ-5D scale, consisting of four parts. The respondents evaluated their health state in five dimensions on the day of the interview. They marked whether they felt better worse or equal to how they felt in the last 12 months on average.

They were familiarized with the visual analogue scale (VAS), where they marked how good their health state was on a scale from 0 to 100 (0 represents the worst health state and 100 represents the best).

For assessing risky alcohol drinking, we used the Slovenian version of AUDIT-C; three-item alcohol screen that helps to identify risky drinkers. For males, we considered a score of six or more as positive, while for females we considered a score of five or more.

For depression, we used the PHQ9 questionnaire. [15]

For assessing nutritional history, we used a tool used in our preventive checkup consisting of eleven questions. Questions considered number of meals, eating breakfast, units of fruits and vegetables eaten per day, units and type of milk products used daily, frequency of processed meat consumption, adding of salt and type of fat used in cooking. Healthy answers consisted of regular meals 3 to 5 times per day, regular breakfast, eating enough fruits and vegetables, drinking skimmed milk, avoiding processed meat and using unsaturated fats. Based on their answers, patients were classified in 3 groups – groups with appropriate nutrition, satisfactory nutrition and unsatisfactory nutrition.

For assessing physical activity, patients reported amount of intense physical activity per usual week and amount of moderate physical activity per usual week. Patients were considered sufficiently physically active if they reported 90 minutes or more of intense physical activity, 150 minutes or more of moderate physical activity OR 60 minutes of intense and 60 minutes of moderate physical activity per week.

For assessing risk of stress patients were given two questions with answers from 1 (never) to 5 (daily). First question asked about feelings of anxiety, stress and being under pressure. Second question asked about managing anxiety, stress and feelings of being under pressure. Answers were from 1 (easily) to 5 (not managing at all, my life is unbearable). Eight points or more combined from both answers puts patients at risk for stress.

Data were analyzed using the SPSS Statistics software. To determine characteristics of smokers in family physicians practices we used logistic regression. The level of significance was of 5%.

III. RESULTS

The study sample was of 747 people, 65.2% (487) females and 34.8% (260) males. Average age was 42.5 ± 8.5 years ranging from 30 to 65 years. Of all, 18.2% (136) were smokers and 81.8% (611) non-smokers.

TABLE I - CHARACTERISTIC OF SMOKERS AND NON-SMOKERS, LOGISTIC REGRESSION

Item	OR	p
Signs of depression		
No	ref	
Yes	1.34	0.586
Sex		
female	ref	
male	0.75	0.235
Physical activity		
Insufficient	ref	
Sufficient	0.54	0.043
AUDIT drinking status		
Abstinent	ref	
Non-hazardous drinking	1.07	0.872
Hazardous drinking	1.67	0.362
CVD risk		
<5%	ref	
5-10%	3.38	<0.001
10-20%	4.79	<0.001
20-40%	4.16	0.007
Nutritional history		
Unsatisfactory	ref	
Satisfactory	0.60	0.027
Appropriate	0.97	0.925
Stress		
Not at risk	ref	
At risk	1.88	0.210
Body Mass Index		
<25	ref	
<30	0.86	0.539
30 or more	0.92	0.802
VAS (10 units)	1.01	0.889
Age (10 years)	0.60	0.001
Systolic blood press. (10mmHg)	0.83	0.067
Diastolic blood press. (10mmHg)	1.16	0.302
Blood sugar (1mmol/L)	0.76	0.094
Total cholesterol (1mmol/L)	1.07	0.741
Triglycerides (1mmol/L)	0.98	0.874
High density lipoproteins (1mmol/L)	0.55	0.037
Low density lipoproteins (1mmol/L)	1.07	0.748
EQ-5D (0.1 unit)	1.00	0.991

This model of logistic regression describes smokers' characteristics in 14.7%. ($p < 0.05$, Nagelkerke $R^2 = 0.147$) and is presented in Table I.

When smokers were compared to non-smokers, no statistically significant difference were observed in signs of depression, sex, drinking status, stress level, body mass index, self-reported evaluation of general health status (both measured with VAS and EQ-5D), systolic and diastolic blood pressure, blood sugar level, total cholesterol level, triglycerides level and LDL level.

IV. DISCUSSION

Our study showed that compared to non-smokers, smokers are less physically active, have worse nutritional habits, are younger, have lower levels of HDL cholesterol and have a higher risk for cardiovascular disease.

According to Slovenian statistical office, there were 18.9% of daily smokers in both 2007 and 2014. The number has decreased to 17.4% in 2019. This is in agreement with Organization for Economic Cooperation and Development (OECD) data in which daily smoking rates have decreased from an average of 23% in 2007 to 18% in 2017 in most countries.

Several studies have reported that compared to non-smokers, smokers presented reduced scores on health-related quality of life. [14, 16] In our study, the difference was not statistically significant, which may be the result of smokers being younger on average than non-smokers. Normative data on HRQL shows that all domains of quality of life had a reduction in their scores as the age group increased. [17]

There is evidence that smokers tend to increase their alcohol consumption, decrease physical activity and have worse nutritional habits compared to non-smokers. [9,18] Smokers tend to eat less of vegetables and fruits, but more of chips, fatty meats and sugar. This however, was not included in our survey.

In agreement with literature our study showed that generally, smokers ate fewer vegetables, fruits, had irregular eating habits, drank less milk and/or used full fat milk and used more of the saturated fats. They scored lower on our nutritional history questionnaire. Compared to non-smokers, less smokers had satisfactory nutritional habits (OR: 0.60; $p < 0.05$) [19 – 21]. Results of our study are very similar to results of a cross sectional study on smoking and diet in healthy adults by Heydari et al. [22]

There is a well-known relationship between smoking and alcohol consumption. [7, 18-20] Slovenian literature shows that only around 40% of smokers (32% of men and nearly 51% of women) does not combine smoking with lifestyle choices as either getting drunk, drinking hazardously and/or smoking marihuana. [7] In our study smokers did not significantly differ in AUDIT drinking status compared to non-smokers. (OR: 1.67; $p = 0.362$). Although the odds ratio is positive, the difference is not statistically significant. This may be due to the fact that 65.2% (487) of all patients were female and men are consistently more likely to drink hazardously than women are. [23] To bypass this limitation a study sample in which both sexes are represented at around 50% is needed.

Compared to non-smokers, smokers tend to be less physically active. In our study, there were significant difference between smokers and non-smokers demonstrating sufficient physical activity as defined by intensity and duration. Smokers were less physically active (OR: 0.54; $p < 0.05$) compared to non-smokers. Same results were observed in a similar study on healthy adults in Tehran. [24] There is evidence that physical inactivity is associated with smoking in old adults. [25] Research also showed that physical activity reduced the likelihood of smoking by adolescents. [26] In line with previous studies, our study presented evidence that smokers spend significantly less time on aerobic activities compared to non-smokers. [27]

Smoking is a leading cause of cardiovascular disease (CVD) morbidity and mortality. Our study showed, that based on Framingham equation, smokers are at higher risk for CVD when compared to non-smokers. Positive association was documented in 5-10% risk group (OR: 3.38; $p < 0.01$), 10-20% risk group (OR: 4.79; $p < 0.01$) and 20-40% group (OR: 4.16; $p > 0.01$). Smoking increases CVD risk both directly as an independent factor and indirectly as on one hand unhealthy lifestyle choices tend to cluster and on other hand it may effect lipid and lipoprotein metabolism. [28, 29]

In agreement with literature our study showed that smokers have lower levels of high-density lipoproteins (OR: 0.55; $p < 0.05$) when compared to non-smokers. Studies suggest that cigarette smoking decreases HDL cholesterol levels and thus increases the risk for CVD. [28-30]

Slovenian literature shows the biggest share of smokers in the age group between 25-34 years of age, decreasing with age. Our results are consistent with this finding, as our study showed that smokers were younger compared to non-smokers (OR: 0.60; $p < 0.05$). [7]

Our study provided some characteristic in which healthy smokers differ from non-smokers. Most of our results are consistent with what is already known about smokers and their lifestyle risk factors when compared to non-smokers. It showed that unhealthy lifestyle choices tend to cluster. Smokers are more likely than non-smokers to engage in other unhealthy behaviors. Given that in Slovenia, major life events in the past year and depression were shown to be risk factors for health, while level of education, absence of long-term disability and chronic pain were identified as predictors of good self-assessed physical health, it would be beneficial in further studies to include more demographic characteristics when investigating determinants of unhealthy behavioural patterns. [31]

As a result of clustering of unhealthy behaviors, smokers are less physically active, have worse nutritional habits and lower levels of HDL cholesterol. This combined leads to increased risk for CVD. Smoking increases the risk of virtually all types of CVD, at least doubling the risk of acute myocardial infarction, cerebrovascular disease and heart failure. [32] Furthermore, according to literature, even with clinically insignificant effect on cholesterol, lipids and blood pressure, smoking is above all an independent risk factor for CVD in the working-age population. [33] Quitting reduces the risk substantially. Quitting in working age may reduce calculated

CVD risk nearly to the same level with people who have never smoked. [34]

Our study was limited in methodology of data collection regarding nutritional habits. People tend to present nutritional habits better as they really are. Journaling or recollecting last days intake would perhaps give more realistic results. Our questionnaire was predefined for use in model practice. It is difficult and inaccurate to estimate nutritional habits purely on type of food. Total calories intake, ratios of macronutrients and quantitative estimation of saturated vs unsaturated fats would perhaps improve accuracy of results and give further insight into differences of diet between smokers and non-smokers.

When estimating physical activity only aerobic activity was observed and measured. According to WHO guidelines on physical activity and sedentary behavior, adults should also do muscle-strengthening activities at moderate or greater intensity that involve all major muscle groups on 2 or more days a week, as they provide additional health benefits. Anaerobic physical activity should be included in further research.

Our results are based on the self-reported data. When researchers use questions that may concern private topics such as nutritional habits, smoking, drinking status etc., bias may arise. Bias is usually due to either social desirability or recall faults. [35] To overcome biased data we used validated questionnaires such as AUDIT-C, PHQ9, EQ-5D etc. as much as possible.

As smoking is the most important preventable cause of morbidity and mortality, great effort should be employed on lifestyle counseling. Since unhealthy lifestyle choices tend to cluster, a holistic approach to counseling should be used. Smoking cessation is desired.

Further research could focus on effect of smoking cessation on nutritional habits, physical activities, alcohol consumption and other risky behaviors.

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