

Assessment of the Motivation for Smoking Cessation among the Citizens of the Republic of North Macedonia

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ABSTRACT

Introduction: North Macedonia is among the top rated countries with high smoking prevalence with high rate of adult smoking 48.4%, and nearly 81.4% of the smokers started smoking before being 25 years of age.

This paper will highlight the prevalence and public's motivation on smoking cessation, broken down into age groups throughout the entire country of North Macedonia.

Materials and Methods: The method is an analytical-descriptive method with cross sectional study, as a result to a quantitative-qualitative survey conducted among the population in 2021 with the collaboration of the Virginia Tech University and the NGO Link Across. Data from the Qualtrics housed surveys and the completed paper surveys were entered into an Excel DB. Descriptive statistics were generated for all questions. Bivariate data were analyzed using r.

Results and Discussion: Smoking is widely spread among all age groups, but with a trend to decrease in numbers as the age is of a higher number - 32.2% belongs to the 18 to 24 year old group. Distribution by gender -57.8% female, 40.4% male. Younger age groups have the highest relative frequencies about the intention to quit smoking within one month. Approximately 16% of participants who were smokers and attempted to quit, were smoke free and successful in cessation. Majority of survey participants who attempted to quit were not successful and resumed smoking within 6 months. This is strong justification of smokers who attempt to quit needing a program that would guide them and maintain the attempts for cessation.

Conclusions: New state programs for smoking cessation should be offered as soon as possible. Also regarding the changes in smoking protection laws, they should be analyzed; some of the changes need to be reverted regarding the law legislation of the new modern ways of tobacco use, which are on the rise all over the world.

Key Words: smoking cessation, motivation, North Macedonia

1. INTRODUCTION

The current situation of North Macedonia (RNM), states that the country is among the top rated countries with high smoking prevalence. North Macedonia has a high rate of adult smoking 48.4 percent, and nearly 81.4 percent of the smokers started smoking before being 25 years of age [1]. The prevalence is 57.9 percent among men, and 39 percent among women. This puts North Macedonia among the top 10 countries in the world with the highest prevalence of smoking among adults.

“*European School Survey Project on Alcohol and Other Drugs*” (ESPAD) was conducted in Macedonia in 1999, 2008, 2015 and 2019 with the main purpose to collect data on substance use and other forms of risk behavior among 15 to 16 year old students. The most recent data on cigarette use among students came from the international ESPAD report 2019 and reported that lifetime prevalence of cigarettes use is 38% (40% boys and 36% girls). On average, 20% of the ESPAD students from 35 countries had used cigarettes during the last 30 days. The percentage is the same in North Macedonia, 20% of the students reported using cigarettes during the last 30 days) 23% boys and 17% girls). The lifetime prevalence rate for the use of e-cigarette ranged between 18% and 65%, with the ESPAD country average of 40%. In our country, the lifetime use of e-cigarettes was 21% with is almost to the lowest rates that were found in this research. Regarding the perceived availability of cigarettes, 60% of students in the participating countries reported that they would find it “fairly easy” or “very easy” to get hold of cigarettes if they wanted to. This percentage was 49 in RNM [2].

The survey “*Substance use among the general population in the Republic of Macedonia*” (GPS) was designed as a cross-sectional study in 2017 with information on the tobacco consumption related to prevalence through two times (lifetime and active-current smokers). Amongst all adults (aged between 15 to 64) 46% of respondents

reported that they are active smokers. Amongst young adults (aged between 15 and 34) the proportion of active smokers (40.2%) was slightly lower compared with all adults. The highest proportion of active smokers was amongst the age groups 35-44 (57.6%) and 45-54 (54.4%). A relatively lower proportion of active smokers (33.9%) was in the age group 15-24. Amongst all adults (aged between 15 and 64) males were much more likely than females to report being active smokers (54.1% of males compared to 33.3% of females). Amongst young adults (15-34 years old) males were much more likely than females to report being active smokers (56.3% of males compared to 42.0% of females). Amongst all adults the lifetime prevalence rate of tobacco consumption was 55.4% and amongst young adults the lifetime prevalence rate of tobacco consumption was 50.7% [3].

The *Global Youth Tobacco Survey (GYTS)* provided a mechanism by which countries can monitor tobacco use among young people between the ages of 13 and 15 and was a guide for implementing and evaluating programs for the prevention and control of smoking. Its purpose was to understand and evaluate the attitudes, knowledge and behavior of students related to tobacco use and its impact on health, smoking cessation, tobacco smoke in the environment, media and advertising, access to tobacco to minors and school curriculum. This research was conducted in 43 countries around the world, and in R. Macedonia this research was conducted in 2002, 2008 and 2015/2016. The data from the latest survey conducted in the Republic of Macedonia showed that 12.4% of students (14.6% of boys and 9.8% of girls) used tobacco. In 2016, 7.6% of students (9.0% boys and 6.1% girls) smoked cigarettes in the last 30 days [4].

The *study on health behavior in school-aged children in R. Macedonia (HBSCM)*, is part of an international study *Health behavior in school-aged children (HBSC)*, in cooperation with the World

Health Organization (WHO) and 42 countries in Europe, North America and Russia. This research has provided information on the health and well-being of children in the countries, aged 11, 13 and 15, in the environments in which they live, learn and grow. The results of this study show that many of the findings are good and encouraging, but there are some that warn of the risks to children and their health. In the latest international research that was conducted in 2017/2018, the prevalence of cigarette-smoking was similar in boys and girls: across all ages, 15% of boys and 13% of girls reported ever having smoked cigarettes and 7% of boys and girls had smoked in the last 30 days. According to the Macedonian data from the latest HBSCM, the prevalence of cigarette-smoking was different between boys and girls: across all ages, 14,6% of boys and 9,5% of girls reported ever having smoked cigarettes and 7,9% of boys and 5% of girls had smoked in the last 30 days [5].

Even though North Macedonia ratified and started with the implementation of the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC) in 2006 and ruled out a general ban on smoking in public places [6], which included all of restaurants and bars in 2010, the progress has stagnated in recent years. This started to worsen in 2018, when the anti-smoking measures were lowered to allow smoking in the outdoor areas of the restaurants and bars, thus allowing smoking to be back in public places, which neglected the hard work of many smoking cessation programs that were implemented in the previous years. The current government provides high agricultural subsidies aimed at stimulating tobacco production and growth within the country, and thus resulting in North Macedonia having the lowest cigarette prices in the region. Areas with a high smoking prevalence are mostly of low socioeconomic and low income areas [7].

This paper will highlight the prevalence and public's motivation on smoking

cessation, broken down into age groups throughout the entire country of North Macedonia.

2. MATERIAL AND METHOD

The method used for this study is an analytical-descriptive method with cross sectional study, as a result to a quantitative-qualitative survey conducted among the population in 2021 with the collaboration of the Virginia Tech University and the NGO Link Across. This cross-sectional study involves distribution of a survey available in three languages, English, Macedonian and Albanian. The survey was promoted and made available for 90 days. The final version of the survey was imported to Qualtrics with separate links for accessing the three different languages. In addition to the electronic versions of the surveys, paper copies were made and distributed to those who could not complete the survey electronically.

Announcements describing the survey and access to the survey were posted on Macedonian public health and health-related agency homepages so Macedonians were aware that there would be an opportunity to complete a survey related to smoking and smoking cessation. The survey was also distributed via a boosted method that allowed for the promotion of the survey on a variety of platforms, including the Link Across Facebook page for online methods and the Institute of Public Health of the Republic of North Macedonia for in-person surveys. This action placed the survey on a greater number of platforms at a higher frequency in order to interact with the greatest amount of our target population as possible. It was assumed that boosting the survey would reach a higher proportion of the older population in order to have a large data set to pull from with their responses. These responses were then included in a bivariate analysis in order to determine the multitude of relationships that were ongoing between survey responses and the stages of change of interest to this study. IRB granted approval for this study in February of 2021.

This same month the survey was launched and distributed throughout every region and municipality of North Macedonia. The survey was electronically boosted with the goal of targeting adult men older than 45 mid-April of 2021. The survey was officially closed April 30th 2021.

2.1. Instrument

In order to determine the motivation to quit smoking among the population, a questionnaire has been made and distributed to the public. As a main source of information, a questionnaire has been conducted among the population. This questionnaire consists of 27 questions divided into 2 blocks. The first part consists of giving consent for using the data in the survey, which continues with basic questions regarding the sex, age group, living area, degree of education and amount of cigarettes smoked daily. It also emphasizes the familiarity of the population with the health hazards that the smoking poses. The second block is consisted of questions regarding the effort and willingness to quit smoking and if there are any state offered programs for cessation that, the population is familiar with their existence and effectiveness. The questions were focus field tested, revised, and underwent a second focus field test. Minor grammatical revisions were made based on feedback from the second focus field test to ensure it was appropriate and culturally sound.

2.2. Sample

The questionnaire was distributed both online and by the 10 regional centers for public health of the Republic of North Macedonia. The target population was smokers across every age group from, starting from 18 years of age and above. The survey was answered by a total of 2925 participants, with many incomplete data received. After omitting the incomplete surveys, a total of 2592 was used in the results and analysis portion of this paper. This (n = 2592) was used to determine the

bivariate analyses that later on are contributed to the different stages of change of smoking status, as well as pulling information from the first round of literature review.

2.3. Statistical Analysis

Data from the Qualtrics housed surveys and the completed paper surveys were entered into an Excel data base. Descriptive statistics were generated for all questions. Bivariate data were analyzed using r.

3. RESULT

The results that arrived from the survey were divided into many categories. According to the age group of the participants, we can see that smoking is widely spread among all age groups, but with a trend to decrease in numbers as the age is of a higher number. A vast majority of the participants (32.2%) belongs to the 18 to 24 year old group. Even though this research is intended to determine the motivation for smoking cessation among all age groups, because of the high number in this age group from 18 to 24 years old, the main focus on the effectiveness of the smoking cessation programs that have an influence on this age group will be studied (Table 1).

Age group (years)	Frequency (n)	Relative Frequency (%)
18-24	834	32,2
25-34	717	27,7
35-44	534	20,6
45-54	530	13,1
55-64	143	5,5
65-74	21	0,8
>75	3	0,1
Total	2782	100

Source: Virginia Polytechnic Institute and State University, 2021

The survey also shows a distribution by gender, which implied that most a higher percentage (57.8%) of the participants are female (Table 2), which should not be representative of the actual country's gender statistics, as North Macedonia in 2020 comprised of 49.9% women and 50.1%

men, according to the State Statistical Office [8].

Table 2. The observed gender of smoking survey participants, listed as question 7 on the survey (n = 2592), North Macedonia 2021

Participant gender	Frequency (n)	Relative Frequency (%)
Female	1497	57,8
Male	1048	40,4
Prefer not to answer	47	1,8
Total	2592	100

Source: Virginia Polytechnic Institute and State University, 2021

The survey was distributed throughout every region of North Macedonia, and the frequency breakdown is shown in the table below. It is important to mention that region 8, which corresponds with the nation's capital Skopje, had the most survey participants, as it is proportionate with the population of the area (Table 3).

Table 3. The observed municipalities of smoking survey participants, listed as question 9 on the survey (n = 2578), North Macedonia 2021

Coded municipality (1-8)	Frequency (n)	Relative Frequency (%)
1 - Vardar	178	6,9
2 - East	230	8,9
3 - Southwest	209	8,1
4 - Southeast	157	6,1
5 - Pelagonia	287	11,1
6 - Polog	359	13,9
7 - Northeast	298	11,6
8 - Skopje	811	31,5
X - n/a	49	1,9
Total	2578	100

Source: Virginia Polytechnic Institute and State University, 2021

Looking at the next data set, participants were asked if there was any intention to quit smoking within one month, and whether they have a strategy plan to implement once participants decide to undergo cessation respectively. Both were covered under questions 20 and 21 in the survey. This is a relatively short-term goal. The data shows that the younger age groups again have the highest relative frequencies for both answers. It is also noted that the relative frequency of participants who have intention to quit increases in the 25-34 age range, indicating that age group has a larger potential for a successful smoking cessation program (Table 4).

Table 4. Bivariate analysis of the intention to quit smoking within one month's age group of participants, listed as question 20 on the survey (n = 2592), North Macedonia 2021

	No intention to quit smoking within a month		Intention to quit smoking within a month	
	Frequency (n)	Relative Frequency (n)	Frequency (n)	Relative Frequency (n)
18-24	598	33	236	30,3
25-34	483	26,7	234	30
35-44	367	20,3	167	21,4
45-54	234	12,9	106	13,6
55-64	112	6,2	31	4
65-74	15	0,8	6	0,8
>75	3	0,2	0	0
Total	1812	100	780	100
Female	1112	61,4	382	49
Male	666	36,8	382	49
Prefer not to answer	34	1,9	13	1,7
Total	1812	100	780	100

Source: Virginia Polytechnic Institute and State University, 2021

The numbers indicate for participants that do not have a strategy plan for quitting in the next month greatly outnumber the those who do have a plan. This may be another useful approach for the project to focus on, whether or not having a plan is an indication of cessation. This will be explored in the discussion section. The gender distribution for intention for quitting

smoking within a month does not skew either female or male, suggesting that a smoking cessation program should not be targeting a specific gender for maximum effectiveness (Table 5).

Table 5. Bivariate analysis of participants who are intending to quit that do or do not have a strategy plan after quitting smoking within the next month, listed as question 21 on the survey (n = 2592) North Macedonia 2021

	Plan to quit, but NO strategic plan within the next month		Plan to quit and already have a strategic plan within the next month	
	Frequency (n)	Relative Frequency (n)	Frequency (n)	Relative Frequency (n)
18-24	698	32,1	136	32,6
25-34	600	27,6	117	28,1
35-44	447	20,6	87	20,9
45-54	285	13,1	55	13,2
55-64	123	5,7	20	4,8
65-74	19	0,9	2	0,5
>75	3	0,1	0	0
Total	2175	100	417	100
Female	1275	58,6	222	53,2
Male	860	39,5	188	45,1
Prefer not to answer	12	1,8	7	1,7
Total	2174	100	417	100

Source: Virginia Polytechnic Institute and State University, 2021

Judging on the ability to remain smoke free, whether participants were successfully smoke free for 6 months or more, or relapsed back into smoking within 6 months. Approximately 16% of participants who were smokers and attempted to quit, were smoke free and successful in cessation. Regarding the age distribution, we can see that the youth primarily tried to quit, but the majority of

survey participants who attempted to quit were not successful and resumed smoking within 6 months. This is largely due to other data on the addictive properties of smoking and the high failure rate and relapse rate of smokers who are willing to quit. This is another strong justification of smokers who attempt to quit needing a program that would guide them and maintain the attempts for cessation (Table 6).

Table 6. Bivariate analysis of successful cases of smoke free participants over at least 6 months against age group of survey participants, listed as question 23 on the survey (n = 2592) North Macedonia 2021

	Resumed smoking within 6 months		Smoke free for 6 months or more	
	Frequency (n)	Relative Frequency (n)	Frequency (n)	Relative Frequency (n)
18-24	673	31	161	38,5
25-34	590	27,1	127	30,4
35-44	469	21,6	65	15,6
45-54	303	13,9	37	8,9
55-64	120	5,5	23	5,5
65-74	16	0,7	5	1,2
>75	3	0,1	0	0
Total	2174	100	418	100
Female	1295	59,6	202	48,3
Male	842	38,7	206	49,3
Prefer not to answer	37	1,7	10	2,4
Total	2174	100	418	100

Source: Virginia Polytechnic Institute and State University, 2021

4. DISCUSSION

As it can be seen from the results of the survey, people don't have any intentions for acting in the near future (6 months). They are mostly unaware with the negative consequences their bad behavior brings. According to the results, the focus for smoking prevention should be focused on the 18-34 year old age ranges. This notion is supported by the data showing the highest percentage of people not intending to quit within 6 months fall into the 18-24 year old

and 25-34 year old range. Participants recognize that their behavior may be problematic, and a more thoughtful and practical consideration of the pros and cons of changing the behavior takes place, with equal emphasis placed on both. The important information to take away from the results would be that there is an overwhelming number of participants (over 93%) that are aware of the health risks associated. The data indicates for participants that 84% (n=2175) of

participants do not have a strategy plan for quitting within the next month greatly outnumber those who do have a plan. With this information, having a set plan presented with participants that are prepared to quit within the next month, may help implement the smoking prevention and cessation program. The action stage gives an indication of how participants have recently changed their behavior and intention to keep moving forward with the behavior change. Majority (64%, n=1668) of participants made no attempts to quit smoking, while 30% had a failed attempt in quitting. Only 5% of the total participants had a successful attempt to quit in the last 6 months, which shows a very low rate to cessation and high rate of prevalence. The maintenance stage involves participants who have sustained their behavior of change for at least 6 months and intend to maintain the behavior change going forward.

Approximately 16% of participants who were smokers and attempted to quit, were smoke free and successful in cessation. This shows a very low rate of successful cessation, and the majority of participants who attempted to quit were not successful and relapsed back to smoking. This is another strong justification of smokers who attempt to quit needing a program that would guide them and maintain the attempts for cessation. In RNM there are Smoking Counseling Centers that work and function in the 10 Centers of Public Health (CPH) through the country, which stated functioning from 2014. The purpose of the work of these counseling centers in the first phase was for the health professionals to try to quit smoking and to be trained so that they can help all their patients in the future, in the process of quitting smoking. In this way, by continuing education and pointing out the extremely harmful consequences of smoking, it contributes to the overall improvement of public health and maintenance of healthy generations in our country. The second phase was to continue the work with all the citizens that are interested and want to quit the smoking.

According to the results obtained from the 10 CPH, the following information was obtained: CPH expressed the need to prepare a special preventive program for the work of counseling centers which will provide budget funds for sustainable operation of counseling services (preparation and printing of propaganda material, copying, procurement of equipment, non-pharmacological therapy, pharmacotherapy, etc.). The Program would provide funds for the Institute of Public Health for a media campaign, coordination of the activities of the counseling centers in the CPH, preparation of a final annual report on the achievements in this area, as well as funds for the Institute for Lung Diseases and Tuberculosis for professional assistance and educating patients who already have health problems as a result of smoking and want to quit. According to the program "Health for All", Institute of Public Health has been implementing a survey with citizens who use tobacco in order to determine the reasons why they don't want to quit with smoking and to obtain a clearer picture that will be a leading framework for implementation on further steps in reducing tobacco use among the population [9]. The survey was conducted by the prevention teams, ie the patronage nurses in the Health Centers throughout the country, together with the preventive examinations and patronage visits that were conducted in the rural areas. Citizens were asked about the reasons for not quitting smoking, as well as what would help them if they wanted to quit smoking. To the question "What is the reason why you do not want to quit smoking?", there was an opportunity for more answers. Most of the respondents answered that the cigarette gives them pleasure (11%). As a second reason, they stated that they tried, but failed to quit smoking (7.69%). All these persons that tried to quit smoking at some point in their life will have bigger opportunities if there are more state programs for smoking cessation that will be easily accessible for this category of smokers. The percentage of

the statement "I can not control my desire for a cigarette" is approximately the same. The percentage of those who do not think at all about their reasons for smoking and who think that they do not have health problems related to smoking is high (about 6%). 4.2% answered that smoking is a habit, while (3.85%) think that if they stop smoking they will gain weight. The lowest percentage (1.28%) was of those who answered that they have a lot of worries, such as unpaid bills. Also, the percentage is small (2.2%) of those who answered that the cancellation methods do not help them (Table 7).

With many countries already focusing on ways to reduce the amount of those who smoke and preventing citizens from smoking in the first place, there are a variety of methods that can be drawn from based off of their applicability to North Macedonia as well as how effective they would be at reaching this specific

population. A simple method to initiate but potentially difficult to approve is to increase retail prices of tobacco or the tax rates that are placed on tobacco products. Increased prices or taxation would cause a significant decrease in the amount of tobacco that current users consume. Those who have quit smoking or have not started are also less likely to pick up the habit due to the expensive nature of it, especially with a basic knowledge of the detrimental health effects that it causes. According to the World Health Organization, a 10% increase in tobacco prices can cause a minimum of a 4% reduction in consumption of tobacco products [10]. Increased taxation on tobacco products is typically well received simply because the majority of the population understands the negative health effects that it causes and therefore supports actions that are taken to prevent the excessive use of its products.

Table 7. Reasons for not quitting smoking	2019	2020	2021
I have not thought so far about it, it does not matter to me	13%	20%	7%
I just do not want to quit smoking	10%	11%	5%
I will be bored if I stop smoking	3%	7%	6%
The cigarette is a pleasure for me	14%	21%	11%
The cigarette gives me energy	2%	10%	6%
I do not worry about smoking, I'm not sick yet (cancer)	3%	5%	3%
I do not have any health problems due to smoking	7%	13%	6%
One day we will all die from something, why should I stop smoking	3%	12%	3%
Smoking is a habit (I need to hold a cigarette, put it in my mouth, hold the box, do something with my hands, need to inhale)	4%	6%	4%
I know many old people who smoke and do not get sick	5%	14%	6%
Others (all) smoke (at home, at work, everywhere)	2%	9%	4%
I have a lot of unpaid bills, worries	1%	8%	1%
Work, life is very stressful	6%	17%	5%
I'm afraid to stop	3%	8%	4%
If I quit smoking I will gain weight	4%	4%	4%
I can not control my desire for cigarettes	7%	9%	7%
I can not stop due to nervousness / anxiety	5%	17%	5%
I have tried, but I can not stop smoking	8%	14%	8%
The cancellation methods do not help me	1%	4%	2%
Other:	0%	1%	1%

Source: Institute of Public Health, Skopje, 2021

A large number of new smokers in younger populations is a direct result of peer pressure. The large majority of respondents in this survey reported that their first time smoking was between the ages of 12-17 (61.7% of participants). This middle to high school age range is a prime age range for a susceptibility to trying new things, especially when others your age have already given in and are bullying others for

not partaking in their habits as well. A study conducted throughout Ethiopian high schools to determine the effects of peer pressure on tobacco usage showed that there was a higher prevalence of smoking rates in communities that also contained higher rates of peer pressure [11]. These rates varied based on regions and educational levels, so it was suggested that educational programs on resisting and combating peer pressure be

implemented throughout school systems, and then those programs be tailored to fit their individual needs.

5. CONCLUSION

North Macedonia, as a country with extremely high smoking prevalence, has too many individuals that either refuse to get help regarding smoking cessation, or refuse to quit even though they are familiar with the dangers and impact the smoking has on their health. Many of them, as seen in the results of the survey think that they will live the same life length, as if they were not smoking. The country needs to offer more options and finance better strategies that focus on smoking cessation among the population. With numbers this high the cost on the health system for treating the smoking related diseases is too big, as well as the numbers of the lives who could have been saved that ended prematurely as a result of smoking, since also the number one cause of death in the country is cardiovascular disease, which is highly associated with smoking. New state programs for smoking cessation should be constructed, approved and offered to the population as soon as possible. Also regarding the changes in smoking protection laws in North Macedonia, they should be analyzed, some of the changes need to be reverted, and as well adding new content in it, regarding the law legislation of the new modern ways of tobacco use, which are on the rise all over the world. Strategies focused towards the new methods of smoking, as well as offering cessation programs for people who are addicted to these new methods, should be considered as a part of North Macedonia's smoking prevention strategy. With a good campaign, with motivation, dedication and hard work, there can be a serious impact on lowering the prevalence.

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