

LIFESTYLES RELATED TO NCD AND UTILIZATION OF PREVENTIVE SERVICES AMONG ADULTS

SLADANA Šiljak¹, LJILJANA KOVAČEVIĆ², DRAGANA DRAGIĆ³

¹Pan European University Apeiron, Banja Luka, Bosnia and Herzegovina, sladjanaps@gmail.com

²Medicinska škola Beograd, Serbia

³Zavod za fizikalnu medicinu i rehabilitaciju "Dr Miroslav Zotović" Banja Luka

ABSTRACT: Leading behavioural risk factors for non communicable diseases (NCD) are smoking, harmful use of alcohol, physical inactivity and unhealthy diet. More than half of population between age 30 and 70 years die annually from NCDs which could be prevented by promotive and preventive measures.

Goal of the paper is to determine lifestyle factors related to non communicable diseases and utilization of preventive services in primary health care center Zvezdara in Belgrade. Survey is cross sectional study with sample size of 210 adults randomly selected. The analysis of the survey data was performed using the statistical data processing program SPSS 19.0 for Windows. Lifestyles factors related to NCDs among adult population in Belgrade are smoking (38,1%), alcohol consumption (32,9%), poor eating habits with high salt intake, more than 5g (29%) and inadequate frequency of meals (61%), sedentary lifestyles during working time (27,1%) and during leisure time (20,4%). Only 16,7% of population have moderate physical activity according to WHO recommendations. Preventive services utilized each third men and each fifth women, people with high level of education ($p=0.001$), professionals ($p=0.007$) who are living in good social conditions ($p=0.000$). Preventive services need to be organized more flexible in relation to public opinion using modern methods of health education via electronic services, media and mobile communications.

Key words: lifestyle factors, non communicable diseases, utilization of preventive health services.

INTRODUCTION

Non communicable diseases (NCD) are the main leading causes of death globally, in the world, and are responsible for more than 41 million of the world's deaths (71%). Burden of NCD is greatest in low and middle income countries, as well as in our country (Risk Factors Collaborators, 2016). Four leading behavioural risk factors which are caused NCD are smoking, harmful use of alcohol, physical inactivity and unhealthy diet (WHO, 2013). These risk factors lead to metabolic changes which increase risk of NCDs: raised blood pressure, overweight/obesity, raised blood glucose and raised blood lipids. Environmental risk factors are also leading causes of NCDs. Tobacco accounts for over 7,2 million deaths yearly, excess salt intake attributed to 4,1 million annual deaths, and more than 1,5 million of deaths annually are attributed to alcohol use and physical inactivity (Risk Factors Collaborators, 2015).

More than 36 milion of people die annually as a result of NCDs, including 15 million people who die too young between ages 30 and 70 years. The majority of premature NCD deaths in this age group belong to the four main noncommunicable diseases: cardiovascular diseases, cancer, diabetes and chronic respiratory diseases. All those diseases are preventable and through the preventive measures could be reduced risk for occurrence of diseases. The global target of WHO Global Action Plan is related to 25% of relative reduction of NCD diseases through reduction of risk factors influencing NCD diseases.

Prevalence of physical inactivity is more than double times higher in high income countries comparing to low income countries. Women are less active than men (WHO, 2018). WHO data from 2010

show that most people consume twice the daily recommended salt intake. Smoking rate was decreased and women smoked less than men, while one in three men currently smoke (WHO, 2018). According to WHO estimation more than 20% of population have raised blood pressure and 10% have raised blood glucose with a risk for developing diabetes.

In area of health promotive measures to reduce NCDs risks are provided general measures which include measures at the level of country and local community and specific measures related to population with risk factors. General measures are smoke-free indoor workplaces and public places, bans on tobacco advertising, restricted access to alcohol consumption, reduced salt intake in food and replacement of trans fat with polyunsaturated fat. Specific measures are related to counseling and preventive check ups. Counseling reduce high risk of developing heart attacks and stroke. For early prevention of cardiovascular diseases are recommended changes in behaviour in area of positive healthy lifestyle and anti aggregation drugs. Screening and treatment of pre-cancerous lesions could reduce the risks of developing leading cancers in burden of diseases (breast cancer, respiratory tract cancers and cancers of abdominal organs). Through implementing „Best buys“ initiatives by WHO could reduce 9,6 milion of premature deaths due to NCDs by 2025 (WHO, 2017).

Preventive measures in health care system are provided to reduction of risk factors for non communicable diseases. Preventive measures are universal oriented to whole population and selective which are oriented to vulnerable population groups (Strategy for public health in Republic of Serbia, 2018). Activities in Strategy are focused to quitting smoking and reduced alcohol consumption, counseling for healthy eating habits, promoting physical activity and preventive check ups for early identification of malignant diseases (Strategy for prevention and control of non communicable diseases in Republic of Serbia, 2009). According to Rule book on preventive services which are provided in health care system for adults aged 18 and older in primary health care are realized health promotive and preventive measures and activities to reduce risk factors. Preventive activities providing by family medicine teams are preventive check ups of blood pressure, anthropometric measures and identification of smoking and substance abuse status (Ordinance on the content and scope of the right to health care from compulsory health insurance and participation for 2019). For obesity people and people with hypertension there are provided measurements of blood glucose and cholesterol.

Prevalence of adult's smoking according to estimation of WHO in 2016 is 36% in Serbia which is similar to regional country, Bosnia and Herzegovina (38%). Prevalence of alcohol consumption among adults in Republic of Serbia is 49,3% (Ministry of Health of Serbia, 2019) but in Republic of Srpska 44,3% from which 16,8% of adults are daily consumers (Ministry of Health and Social Welfare of the Republic of Srpska, 2011).

Prevalence of physical inactivity according to WHO estimation among adults in Serbia is 41% which is for 15% more than in BiH (26%). People which are insufficient physical active have 20-30% more risks from premature death (WHO, 2010). According to national data, mean population salt intake among adults in Serbia is 9g/day, as well as in BiH and prevalence of obesity among adults is 24%.

Goal of the paper is to determine lifestyles factors related to non communicable diseases and utilization of preventive services in primary health care centre.

MATERIALS AND METHODS

Survey is cross sectional study of randomly selected people aged older than 18 who visited primary health care center in Zvezdara, one of Municipality in Belgrade, Serbia, during summer 2020 year. Sample size consisted of 210 of respondents who visited general practitioners in primary health care centers be-

tween 8AM-3PM (eight hours) without diagnosis of infectious diseases and noncommunicable diseases. Because of pandemic COVID 19 working conditions all patients had to wear mask and were in waiting room before formal invitation to entry in ambulance.

One nurse was at the triage point giving the instructions abouts survey methodology and receiving formal consent from patients aggred to participate in survey. Each patient could break the survey in every moment according to ethical considerations. Mean time for completing questionarre was approximately 15 minutes. Special designed questionairre was constructed according to accesibility of proffesional and scientific studies and guidelines of World Health Organizations and European Health Interview Survey (EHIS). Independent variables used in survey are sociodemographic characteristics: age (distributed with 10 years age groups), sex (female/male), level of education (primary, secondary, high and faculty), employment (unemployed, senior citizen, professionals, administrative staff and technical staff) and social status (poor, average and good). Dependent variables are divided according to possession of risk factors (smoking, alcohol abuse, physical inactivity and eating habits). Among questions about smoking we selected only daily smoking and daily alcohol consumption without number of consuming products. National study on population health in Serbia in 2019 selected those indicators according to European Core Health Indicators-ECHI indicators, to make it possible to compare the health of the population both this year and over the period of time. Frequency of food intake and salting food are selected between questions about eating habits and are direct risks for obesity and hypertension. Physical activity during working and leisure time are indicators recommended from WHO Global recommendations on physical activity for Health (2010) for examinations of main risks for NCD.

Utilization of primary health care services in area of health promotion (counseling and education in last 6 months) and preventive services consisted of check ups for early identification of risk factors for NCDs belong to domain of dependent variables. Health education methods are general public tools which patients can use according to physicians recommendations. Questions about usage of health education tools consisted of different types of health education methods and persons (health workers) who mostly recom mendat that.

Statistical analysis consisted of statistical parametric and non parametric tests. Among the methods for assessing the significance of the differences between socio-demographic characteristics and utilization of preventive services we used statistical chi-square test χ^2 , for nonparametric features. The analysis of the survey data was performed using the statistical data processing program SPSS 19.0 for Windows.

RESULTS

In survey are participated 210 of respondents, divided by sex, most of them in age group 30-39 years (24,76%), in average social conditions (48,10%) and with secondary level of education (44,76%) (Table 1).

Table 1. Distribution of respondents according to sex, age and social status

Sociodemographic characteristics	Variable	Number	Percent
Sex	Male	105	50
	Female	105	50
Age groups	18-29	35	16,66
	30-39	52	24,76
	40-49	37	17,62
	50-59	38	18,10
	60+	48	22,86
Social status	Poor	39	18,57
	Average	101	48,10
	Good	70	33,33
Level of education	Primary	5	2,38
	Secondary	94	44,76
	High	47	22,38
	Faculty	55	26,19
	Mr/PhD	9	4,29
TOTAL		210	100

Leading risk factors for NCDs among adults are smoking (38,1%) and alcohol consumption (32,9%) (Table 2). Eating habits are assessed according to regularity of meals and salt intake more than 5 gr. According to WHO for healthy eating habits are recommended 3 meals and 2 snacks and less than 5 grams salt intake daily. According to WHO recommendations for prevention of risk factors leading to NCDs and continuing promotion of healthy lifestyles, each person need a minimum 30-60 minutes of moderate physical activity during day. Moderate activities are riding a bike, fast walking, aerobic, running, swimming and other activities spending time to sweat and breathe (WHO, 2017).

More than half of respondents (61%) have irregular daily eating habits with daily intake less than 3 main meals and 2 snacks. Each fourth respondent takes three and more hours providing activities which are sedentary during daily working time and each fifth respondent takes sedentary lifestyle during leisure time (Table 2).

Table 2. Lifestyle and risk factors for NCD

Lifestyle factors	Variable type	Yes Number	Percent	No Number	Percent
Smoking	Daily	80	38,1	130	61,9
Alcohol consumption	Daily	69	32,9	141	67,1
Regularity of meals	Daily	82	39	128	61
Salt intake more than 5 gr	Daily	61	29	149	71
Sedentary activities in working time	3 hours and more	57	27,1	153	72,9
Sedentary activities in leisure time	daily	43	20,4	167	79,6
Daily moderate physical activity	30-60 minutes	35	16,7	175	83,3

At the level of primary health care, for adults older than 18, health care professionals provided preventive check ups in order to early identify and reduce risk factors for NCDs. Preventive check ups are routine and basically associated with counseling for establishment and improvement of healthy lifestyle habits.

According to survey results, preventive services are utilized in primary health care by each third men and each fifth women (Table 3). Preventive services are provided mainly in age group of 30-39 years (30,4%) and among population older than 60 years (25%). According to the educational level, preventive services are mainly provided among population with faculty (41,1%) and high schools (35,7%). People living in good social conditions are mainly beneficiaries of preventive services (48,2%) and professionals who worked in different area of public business (42,9%) (Table 3).

Table 3. Utilization of preventive services according to sex, age, level of education and social status

Utilization of preventive services	Variable type	Yes Number	Percent	No Number	Percent	X ² p
Sex	Male	33	31,4	72	68,6	$\chi^2 = 2.435$ p=0.119
	Female	23	21,9	82	78,1	
Age groups	18-29	10	17,8	25	16,5	$\chi^2 = 13.384$ p=0.146
	30-39	17	30,4	35	23,2	
	40-49	5	8,9	32	21,2	
	50-59	10	17,9	25	16,6	
	60+	14	25,0	34	22,5	
Level of education	Primary	1	1,8	4	2,6	$\chi^2 = 18.688$ p=0.001
	Secondary	12	21,4	82	53,3	
	High	20	35,7	27	17,5	
	Faculty	23	41,1	41	26,6	
Poor	Social status	9	16,1	30	19,5	$\chi^2 = 25.43$ p=0.000
	Average	20	35,7	81	52,6	
	Good	27	48,2	43	27,9	
Employment	Unemployed	9	16,1	38	24,7	$\chi^2 = 25.874$ p=0.007
	Senior citizen	6	10,7	23	14,9	
	Professionals	24	42,9	38	24,7	
	Administrative staff	6	10,7	32	20,8	
	Technical staff	11	19,6	23	14,9	

During realization of preventive services family physicians used different educational methods for counseling, giving instructions and demonstrate skills for early identification of risks factors for non-communicable diseases, developing control mechanisms of diseases and giving instructions for adequate treatment of diseases. Most used health educational methods are media presentations (58,1% of men and 65,7% of women) but each eight male and female receive preventive messages through communication and printed materials (Table 4). People who are living in poor social conditions used printed materials more often than people living in average and good social environment. People with secondary level of education receive more than half of information about prevention, through communication with health professionals, but only one third people with high educational level degrees and each ten person with faculty. Transfer of preventive messages through media are the most popular method among population with different levels of educations, mainly high educated people, but printed material is also known as most popular method of giving healthy messages through brochures, leaflets and flyers (Table 4).

Table 4. Utilization of health educational methods in preventive services according to sex, social status and level of education (%)

Utilization of health educational methods	Variable type	Communication material	Media	Video presentation	Printed material	X ² p
Sex	Male	12,4	58,1	15,2	14,3	$\chi^2 = 2.020$ p=0.568
	Female	12,4	65,7	9,5	12,4	
Social status	Poor	2,6	71,8	2,6	23,1	$\chi^2 = 21.733$ p=0.041
	Average	15,3	57,6	8,1	9,9	
	Good	11,4	54,3	22,8	11,4	
Level of education	Primary	0	80	0	20	$\chi^2 = 36.271$ p=0.000
	Secondary	53	75,5	8,5	10,6	
	High	29,8	40,4	8,5	21,3	
	Faculty	10,9	56,3	21,9	10,9	

DISCUSSION

Smoking is associated with increased number of non communicable diseases, especially high blood pressure and cardiovascular chronic diseases (Department of Health and Human Services, 2006). In eastern part of Europe and East Asia estimated that more than 60% of men and 40% of women smoked daily (Thun, 2012).

Prevalence of smoking among adult population in Republic of Serbia in 2019. is 39,3% (Ministry of health of Serbia, 2019) and in our study is 38,1%. Smoking rate among adults in Republic of Srpska is 28,7% (Ministry of Health and Social Welfare of the Republic of Srpska, 2011) but in Republic of Croatia is 27,4% of daily smokers among adults (Regional pattern of smoking in Croatia, 2009). The prevalence of cigarette smoking was higher in men (33.8%) than in women (21.7%).

Moderate alcohol consumption has been inversely associated with the risk of cardiovascular diseases and diabetes, although the benefits may be greater for persons with existing cardiovascular risk factors than for those without such risk factors (Roerecke, 2012).

The burden of diseases associated with alcohol consumption increased mainly from cancers, unintentional injuries, alcohol-related violence, neuropsychiatric and cardiovascular diseases especially in eastern part of Europe with a high prevalence of harmful drinking (Zaridze D, 2009). One third of population in our study consumed alcohol daily which is similar to WHO estimation of regional country data (WHO, 2016).

Overweight is responsible for about 3,4 million annual deaths and 3.8% of the global burden of diseases, and global prevalence of obesity (defined as a BMI ≥ 30) doubled in latest 30 years with increased prevalence of diseases such as diabetes and cardiovascular diseases (Ezzati, 2013; Stvenes, 2012). According to results presented in our study, adults are at risk for developing previously described non communicable diseases, specially because of poor eating habits with irregularity of meals and high salt intake. More than half of adults in Serbia (56,6%) and 42,4% in Republic of Srpska have 3 main meals every day, data are from national studies. Every tenth person according to national study in Serbia and Republic of Srpska eat more than 5g salt daily but in our study approximately one third of respondents consumed salt daily.

Low dietary intakes of fruits, vegetables and high dietary intake of salt are individually risk factors responsible for more than 4% of the global disease burden (Lim, 2012). Many observational studies shown the benefits of lower fats and salt intake and healthy dietary patterns (He, 2013, Estruch, 2013). A high intake of salt is a risk factor for cardiovascular diseases. The most worrisome aspects of the Serbian diet were high intakes of saturated fat, sugar and sodium (Djurić, 2020). Study in BiH presented that people are living in high social conditions and youngsters eat more sugar and sweets but people live in poor conditions

eat high fat dairy (Gičević, 2019). According to Croatian study the unhealthy dietary habits were practiced by approximately one quarter of the adult population. Prevalence of unhealthy dietary habits was higher in men in all regions (Jelinić Doko, 2009).

Preventive measures which are public oriented declined rates of hemorrhagic stroke and abdominal cancer. Finland is European country in which effective preventive measures are associated with lower salt intake declined rates of stomach cancer and hemorrhagic stroke (Toumlehto, 1984). Rate of sedentary lifestyle during usual day in population of Republic of Serbia is 23% which is similar in our study where are 27% of adults sedentary during working time (only seating and working with PC and papers) and every fifth person is sedentary during leisure time. In Croatia, 35.8% of the population are physically inactive. Physical inactivity is higher in men than in women (43.7% vs 30%). During leisure time, 56,5% of men and 47,6% of women are inadequately physically active (Duraković-Misigoj, 2007). Moderate physical activity during period of 30-60 minutes have 16,7% of adults which is more for 5,6% than among population in national study. More than two third of population in Republic of Srpska are usually sedentary with 10% of people use moderate physical activity daily, data are from national study.

According to survey results, male use preventive services (33%) more than female (23%). In BiH preventive services used female more than male (Kurspahić-Mujčić, 2019). Higher level of education and better social conditions are related to often utilization of preventive health services, data are from European study (Jusot, 2012) as well as in our study, preventive services are mainly provided among population with faculty (41,1%) and better social conditions (48,2%). Utilization of media in providing health promotive and preventive services are most important health educational method in our study. Despite the low uptake of preventive interventions, more than two third of beneficiaries of preventive services are interested in remote access to preventive services using telemedicine platforms and e-consultations, data are from Poland (Agrawal, 2021). Social trend in communication using mobile applications and other media will have positive impact on communication in health services in area of health promotion and diseases prevention.

CONCLUSION

Lifestyles factors among adult population in Belgrade are smoking (38,1%), alcohol consumption (32,9%), irregularity of meals (61%) and more salt intake (29%). Physical activity is inadequate by 16,7% of population who had daily moderate activity during 30-60 minutes had 16,7% of population. Sedentary activities during working time had 27,1% and during leisure time 20,4%. Preventive services utilized each third men and each fifth women, mainly in age groups 30-39 years (30,4%) and among population with faculty (41,1%). People living in good social conditions are mainly beneficiaries of preventive services (48,2%). Preventive services need to be organized more flexible in relation to public opinion. Consultation and health education could be organized via modern communication technologies, mobile applications and electronic communications. On that way obstacles in access to preventive services would be overcome and it would increase coverage of preventive health services.

REFERENCES

- Risk Factors Collaborators (2016). Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational and metabolic risks or clusters of risks, 1990–2015: a systematic analysis for the Global Burden of Disease Study. *Lancet*, 388 (10053), 1659-1724
- World Health Organization (2013). *Global Action Plan for Prevention and Control of NCD 2013-2020*. Geneva, World Health Organization.
- World Health Organization (2018). *Noncommunicable diseases. Country profiles 2018*. Geneva, World Health Organization.
- World Health Organization (2017). „Best buys“ and other recommended interventions for the prevention and control of noncommunicable diseases. Geneva: World Health Organization.
- Strategy for public health in Republic of Serbia, 2018-2026 (2018). *Official Gazette of Republic of Serbia* 61/2018

- Strategy for prevention and control of noncommunicable diseases in Republic of Serbia (2009). Official Gazette of Republic of Serbia 22/2009
- Ordinance on the content and scope of the right to health care from compulsory health insurance and participation for 2019. Official Gazette of Republic of Serbia 07/2019
- Department of Health and Human Services (2006). The health consequences of involuntary exposure to tobacco smoke. National Center for Chronic Disease Prevention and Health Promotion. Atlanta.
- Thun M, Peto R, Boreham J, Lopez AD (2012). Stages of the cigarette epidemic on entering its second century. *Tob Control*, 21, 96-101
- Ministry of Health of Serbia (2021). Survey on population health in Serbia in 2019. Public Health Institut of Republic of Serbia. Beograd. Available at: <https://publikacije.stat.gov.rs/G2021/pdf/G20216003.pdf> .Accessed 01.10.21
- Ministry of Health and Social Welfare of the Republic of Srpska (2011). Survey on population' health in Republic of Srpska. Public health Institute of Republic of Srpska. Banja Luka.
- World Health Organization (2010) . Global recommendations on physical activity for Health: Geneva, WHO.
- Roerecke M, Rehm J (2012). The cardioprotective association of average alcohol consumption and ischaemic heart disease: a systematic review and meta-analysis. *Addiction*, 107, 1246-1260
- Zaridze D, Brennan P, Boreham J, et al (2009). Alcohol and cause-specific mortality in Russia: a retrospective case-control study of 48,557 adult deaths. *Lancet*;373, 2201-2214
- Ezzati M, Riboli E (2013). Behavioral and Dietary Risk Factors for Noncommunicable Diseases. *New England Journal of Medicine*, 369, 954-964
- Stevens GA, Singh GM, Lu Y, et al (2012). National, regional, and global trends in adult overweight and obesity prevalences. *Popul Health Metr*,10, 22-22
- Lim SS, Vos T, Flaxman AD, et al (2012). A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet*,380, 2224-2260
- He FJ, Li J, Macgregor GA (2013). Effect of longer term modest salt reduction on blood pressure: Cochrane systematic review and meta-analysis of randomised trials. *British Medical Journal*, 346.
- Estruch R, Ros E, Salas-Salvado J, et al (2013). Primary prevention of cardiovascular disease with a Mediterranean diet. *New England Journal of Medicine*, 368:1279-1290
- Tuomilehto J, et al (1984). Trends in stomach cancer and stroke in Finland: comparison to northwest Europe and USA. *Stroke*, 15, 823-828
- Samardžić S, Marvinac Vuletić G, Prlić A (2009). Regional pattern of smoking in Croatia. *Coll Antropol*, 1, 43-6
- Duraković-Misigoj M, Heimer S, Gredelj M, Zeljko H, Sorić M (2007). Physical inactivity in Croatia. *Acta Med Croatica*, 61(3), 253-8.
- Djurić Z et al (2020). Association of meal timing with dietary quality in a Serbian population sample. *BMC Nutrition*, 45
- Gicevic S et al (2019). Demographic and socio-economic predictors of diet quality among adults in Bosnia and Herzegovina. *Public Health Nutrition*, 22 (17), 3107–3117
- Jelinić Doko J et al (2009). Regional Differences in Dietary Habits of Adult Croatian Population. *Coll. Antropol.* 33 Suppl. 1, 31–34
- Kurspahić-Mujčić A, Mujčić A (2019). Preventive health services utilization in patients treated by family physicians. *Med Glas, Zenica*; 16 (2)
- Jusot F, Or Z, Sirven N (2012). Variations in preventive care utilisation in Europe. *Eur J Ageing*, 9, 15–25
- Agrawal S, Golebiowska J, Makuch S, Mazur G (2012). Prevalence of Use of Preventive Services in Poland: Result from a Population-Based Nationwide Study. *Journal of Clinical Medicine*, 10, 2084

Received: November 12, 2021

Accepted: December 1, 2021

