

## ZNAČAJ KOLOREKTALNOG KARCINOMA U OBOLEVANJU I UMIRANJU ODRASLOG STANOVNIŠTVA JUŽNOBANATSKOG OKRUGA U PERIODU OD 2010. DO 2019. GODINE

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### SAŽETAK

**Uvod/cilj:** Prema podacima GLOBOCAN-a, kolorektalni karcinom (KRK) u svetu predstavlja veliki javno zdravstveni problem, jer je 2018. godine registrovano 1.849.518 novoobolelih i 880.792 umrlih. U Srbiji KRK je drugi vodeći uzrok obolevanja kod muškaraca (iza karcinoma pluća), a treći kod žena (iza karcinoma dojke i pluća). Cilj rada je da se kod odraslih analizira kretanje vanbolničkog obolevanja, stope hospitalizacije i mortaliteta od KRK u Južnobanatskom okrugu u periodu 2010-2019. godine.

**Metode:** Primenjen je deskriptivni statistički metod rada. Podaci iz rutinske zdravstvene statistike analizirani su za period 2010-2019. godine. Praćeni su pokazatelji vanbolničkog obolevanja, bolničkog lečenja i umiranja od KRK odraslog stanovništva Južnobanatskog okruga.

**Rezultati:** U Južnobanatskom okrugu dolazi do porasta vanbolničkog obolevanja, kao i stopa hospitalizacije od KRK. Na godišnjem nivou je zbog KRK u bolnicama Vršac i Pančevo hospitalizovano 214 pacijenata. Prosečna starost je iznosila 66,8 godina, a prosečna dužina lečenja 8,4 dana. Najviše hospitalizovanih je starosti od 60 do 69 godina. U obe bolnice se beleži viša stopa hospitalizacije kod muškaraca nego kod žena. Oko 110 ljudi godišnje u okrugu izgubi život zbog KRK, a prosečna starost umrlih je 75,7 godina. Najviše umrlih muškaraca je starosti od 70 do 79 godina (32,7%), a više od 80 godina kod žena (31,8%). Među vodećim uzrocima umiranja kod muškaraca je KRK na devetom, a kod žena na trinaestom mestu, a stopa mortaliteta je viša kod muškaraca nego žena.

**Zaključak:** Zbog značajnog učešća u obolevanju i umiranju, KRK predstavlja veliki zdravstveni problem stanovništva Južnobanatskog okruga. U cilju unapređenja zdravlja stanovništva neophodno je sprovesti organizovani skrining u cilju ranog otkrivanja KRK u ciljanoj populaciji, a intenzivnijom promocijom zdravlja i zdravih stilova života redukovati izloženost faktorima koji se dovode u vezu sa KRK.

**Ključne reči:** kolorektalni karcinom, oboljevanje, umiranje, Južnobanatski okrug

### Uvod

Kolorektalni karcinom (KRK) u razvijenom svetu predstavlja veliki zdravstveni problem zbog visoke incidencije i mortaliteta. Rastuće znanje o karakteristikama ovog karcinoma (po pitanju genetike, molekularne biologije i faktora rizika), kao i intenzivan rad na unapređenju prevencije, dijagnostike i hirurških tehnika, doveli su do poboljšanja ukupnog preživljavanja, ali je ono i dalje nezadovoljavajuće.

Rizik od razvoja ovog tumora zavisi od godina starosti i, prema podacima iz literature, počinje da raste nakon četrdesetih, sa značajnim

porastom između 50. i 55. godine života. Sa svakom daljom dekadom života, rizik od oboljevanja se udvostručuje (1). Sva lica starija od 50 godina nose 4,8% rizika da će do 74 godine života imati karcinom debelog creva, odnosno 2,3% rizika da će umreti zbog posledica ove bolesti (2).

U Srbiji, prema podacima GLOBOCAN-a za 2018. godinu, broj novoobolelih od KRK u populaciji muškaraca je iznosio 3.775, a u populaciji žena 2.374 (3). Standardizovana stopa incidencije (na 100.000) za KRK je bila 36,7 za celokupnu populaciju, 49,0 za muškarce i 26,4

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## THE SIGNIFICANCE OF COLORECTAL CANCER IN THE MORBIDITY AND MORTALITY OF THE ADULT POPULATION OF THE SOUTH BANAT DISTRICT IN THE PERIOD FROM 2010 TO 2019

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### SUMMARY

**Introduction/Aim:** According to the GLOBOCAN data, colorectal cancer (CRC) is a major public health problem in the world, because in 2018, 1,849,518 new cases and 880,792 deaths were registered. In Serbia, CRC is the second leading cause of the occurrence of disease in men (after lung cancer), and the third in women (after breast and lung cancer). The aim of this paper is to analyze the trends of outpatient morbidity, hospitalization and death from CRC in the South Banat District in the period 2010-2019.

**Methods:** A descriptive statistical method was used. Data from routine health statistics were analyzed for the period 2010-2019. The indicators of outpatient illness, hospital treatment and death from CRC of the adult population of the South Banat District were monitored.

**Results:** Outpatient and inpatient morbidity rates from CRC in the South Banat District are on the rise. At the annual level, 214 patients were hospitalized in the hospitals Vršac and Pančevo due to CRC. The average age was 66.8 years and the average length of treatment was 8.4 days. Most of the hospitalized people were aged between 60 and 69. Both hospitals had a higher hospitalization rate for men than for women. About 110 people a year in the district lose their lives due to CRC, and the average age of people who died is 75.7 years. The majority of men who died were aged between 70 and 79 (32.7%), while women were aged 80 and more (31.8%). Among the leading causes of death in men, CRC is in the ninth place, while in women in the thirteenth place, and the mortality rate is higher in males.

**Conclusion:** Due to its significant participation in the occurrence of disease and death, CRC represents a major health problem in the population of the South Banat District. In order to improve the health of the population, it is necessary to conduct organized screening for the early detection of CRC in the target population, with more intensive promotion of health and healthy lifestyles to reduce exposure to factors associated with CRC.

**Key words:** colorectal cancer, morbidity, mortality, South Banat District

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### Introduction

Colorectal cancer (CRC) is a major health problem in the developed world due to the high incidence and mortality. Growing knowledge about the characteristics of this cancer (in relation to genetics, molecular biology, and risk factors), as well as the intensive work on the improvement of prevention, diagnostics, and surgical techniques, have brought to the improvement of survival, but it is still unsatisfactory.

The risk of developing this cancer depends on age and according to the data from literature, it starts to grow after forties, with the significant increase between 50 and 55 years. The risk of the occurrence of this disease is doubled with the every new decade in life (1). All persons older than 50 years have a 4.8% chance of developing colorectal cancer until they get 74, that is, a 2.3% risk of dying from this disease (2).

In Serbia, according to the GLOBOCAN data for 2018, the number of new cases in the

za žene. KRK je drugi vodeći uzrok obolevanja kod muškaraca (iza karcinoma pluća), sa procentualnim učešćem od 15,0% među svim novoobolelim od malignih tumora u Srbiji, a treći kod žena (iza karcinoma dojke i pluća), sa učešćem od 10,4% (3). Stope incidencije KRK rastu sa godinama starosti.

Standardizovana stopa mortaliteta (na 100.000) za rak kolorektuma je u Srbiji, 2018. godine, prema podacima GLOBOCAN-a, bila 16,8 za celokupnu populaciju, odnosno 23,3 za muškarce i 11,6 za žene (3). Na osnovu stope mortaliteta, Srbija pripada zemljama sa visokim mortalitetom. Kod oba pola, stope mortaliteta za rak kolorektuma rastu sa godinama starosti i najviše su kod osoba starosti 75 i više godina.

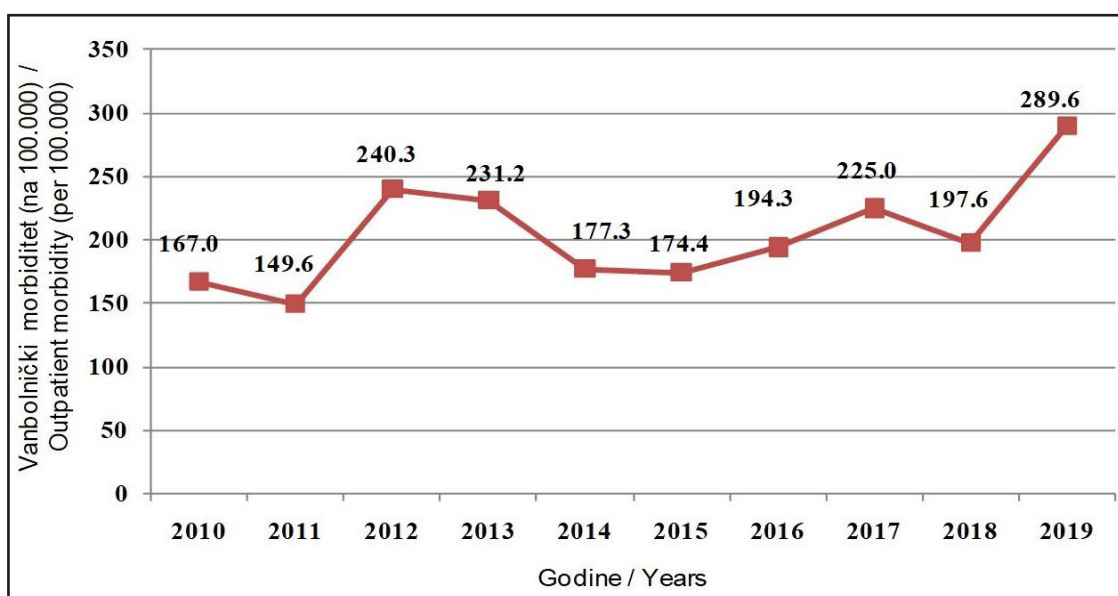
Cilj ovog rada je bio da se kod odraslih analizira kretanje vanbolničkog morbiditeta, kao i stope hospitalizacije i mortaliteta za KRK na teritoriji Južnobanatskog okruga u periodu 2010-2019. godine.

## Metod

Podaci o obolevanju i umiranju od KRK (MKB-10 šifre C18-C21) u Južnobanatskom okrugu preuzeti su iz rutinske zdravstvene statistike. Podaci o registrovanom vanbolničkom morbiditetu (koji obuhvata novoobolele i staroobolele) dobijeni su na osnovu podataka iz zdravstveno statističkih izveštaja o utvrđenim oboljenjima i stanjima (Obrazac SI - 06) u osam domova zdravlja Južnobanatskog okruga

(Alibunar, Bela Crkva, Vršac, Kovačica, Kovin, Opovo, Pančevo i Plandište) u službama za zdravstvenu zaštitu odraslih. Za podatke o hospitalizaciji korišćene su elektronske baze izveštaja o hospitalizaciji, a podaci o mortalitetu dobijeni su iz elektronske baze o umrlim licima koja se formira iz obrasca potvrde o smrti (Obrazac DM 2), i analizirani su za period 2010-2019. godine.

U radu je primenjen deskriptivni statistički metod rada. U cilju analize podataka u radu je korišćen vanbolnički morbiditet, stopa hospitalizacije i stopa mortaliteta za odraslu populaciju uzrasta od 18 i više godina. Vanbolnički morbiditet predstavlja odnos između ukupnog broja obolelih (novoobolelih i staroobolelih) od KRK koji su se javili u osam ustanova primarne zdravstvene zaštite na području Južnobanatskog okruga tokom jedne godine i broja stanovnika datog okruga. Stopa hospitalizacije izračunata je kao odnos broja hospitalizovanih pacijenata zbog KRK tokom jedne godine u dve bolnice na teritoriji Južnobanatskog okruga i broja stanovnika na teritoriji Južnobanatskog okruga prema popisu stanovništva iz 2011. godine. Stopa mortaliteta je računata kao odnos između broja umrlih od KRK na teritoriji Južnobanatskog okruga tokom godine i broja stanovnika okruga. Broj stanovnika je određen prema popisu iz 2011. godine. Sve izračunate stope su iskazane na 100.000 stanovnika.



**Grafikon 1.** Vanbolnički morbiditet (na 100.000) kolorektalnog karcinoma (C18-C21) u Južnobanatskom okrugu u periodu 2010-2019. godine, uzrast 18 i više godina

male population amounted to 3,775, while this number was 2,374 in the female population (3). The standardized incidence rate (per 100,000) for CRC was 36.7 for the whole population, 49.0 for males and 26.4 for females. CRC is the second leading cause of developing disease in men (after lung cancer) with the share of 15% among all new cases of malignant tumors in Serbia, while it is the third cause in women (after breast cancer and lung cancer) with the share of 10.4% (3). Incidence rates of CRC increase as people get older.

The standardized mortality rate (per 100,000) for colorectal cancer in Serbia in 2018, according to the GLOBOCAN data, was 16.8 for the whole population, that is, 23.3 for males and 11.6 for females (3). According to the mortality rate, Serbia belongs to the countries with high mortality. In both males and females, mortality rates for colorectal cancer increase as people get older and they are highest among people aged 75 and more.

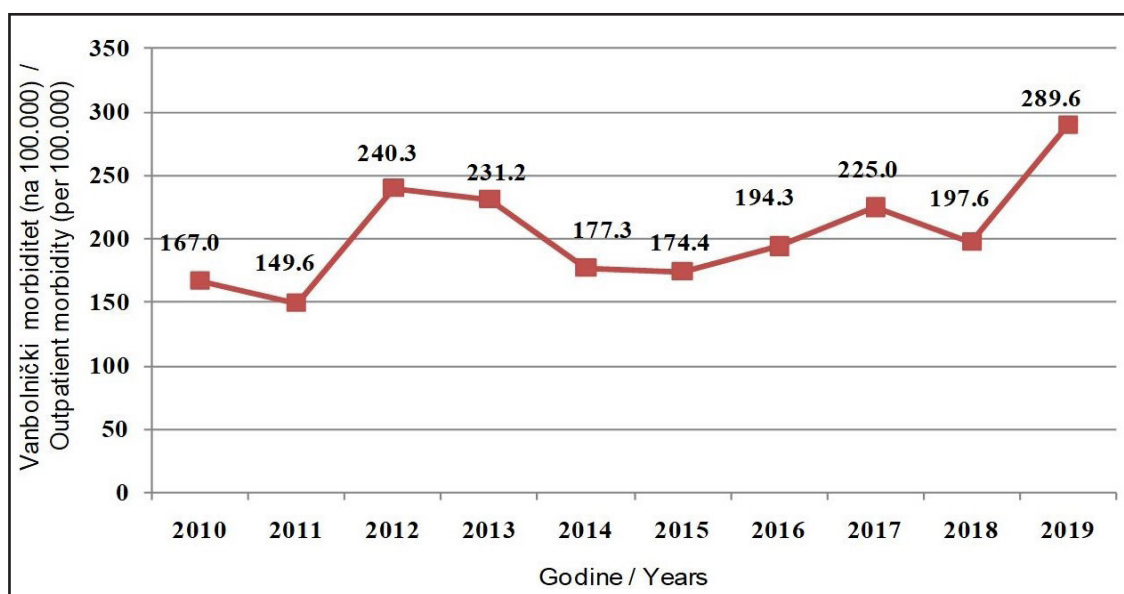
The aim of this study was to analyze the trend of outpatient morbidity in adults, as well as the hospitalization and mortality rate for CRC on the territory of the South Banat District from 2010 to 2019.

## Methods

Data about developing colorectal cancer and dying from it in the South Banat District were taken from the routine health statistics.

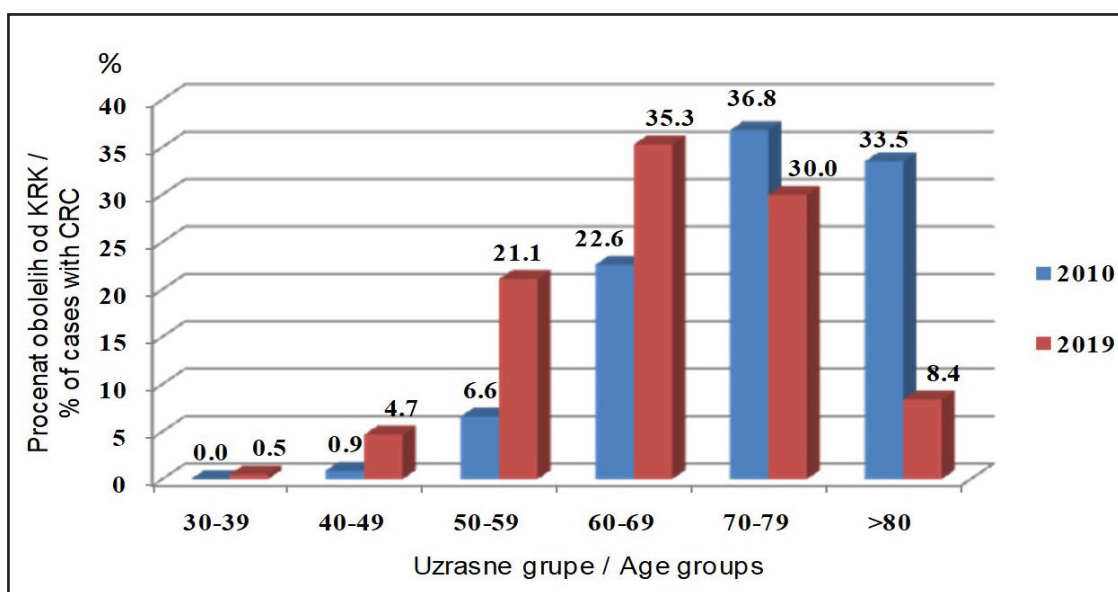
Data about the registered outpatient morbidity (which includes new cases and preexisting cases, as well) were obtained based on the data from health statistical reports about the confirmed diseases and states (Form SI - 06) in eight health care centers of the South Banat District (Alibunar, Bela Crkva, Vrsac, Kovacica, Kovin, Opovo, Pancevo, and Plandiste) at the departments for the health care of adults. The electronic databases of reports about hospitalization were used for the data about hospitalization, while the data about mortality were obtained from the electronic database of deaths, which is formed from the certificate of death form (Form DM), and these data were analyzed for the period 2010-2019.

The descriptive statistical method was used in the study. In order to analyze data, outpatient morbidity, hospitalization rate and mortality rate were used in the study for the population aged 18 and older. Outpatient morbidity is the ratio between the total number of ill people (new and preexisting cases), who developed CRC and who visited eight institutions of primary health care on the territory of the South Banat District during one year, and the number of people from that district. The hospitalization rate was calculated as the ratio of the number of hospitalized patients due to CRC during one year at two hospitals on the territory of the South Banat District and the number of people living on the territory of the South Banat



**Figure 1.** Outpatient morbidity (per 100,000) of colorectal cancer (CRC) (C18-C21) in the South Banat District in the period 2010-2019. years, age 18 and over





**Grafikon 2.** Vanbolnički morbiditet (na 100.000) kolorektalnog karcinoma (C18-C21) u Južnobanatskom okrugu u periodu 2010-2019. godine, uzrast 18 i više godina

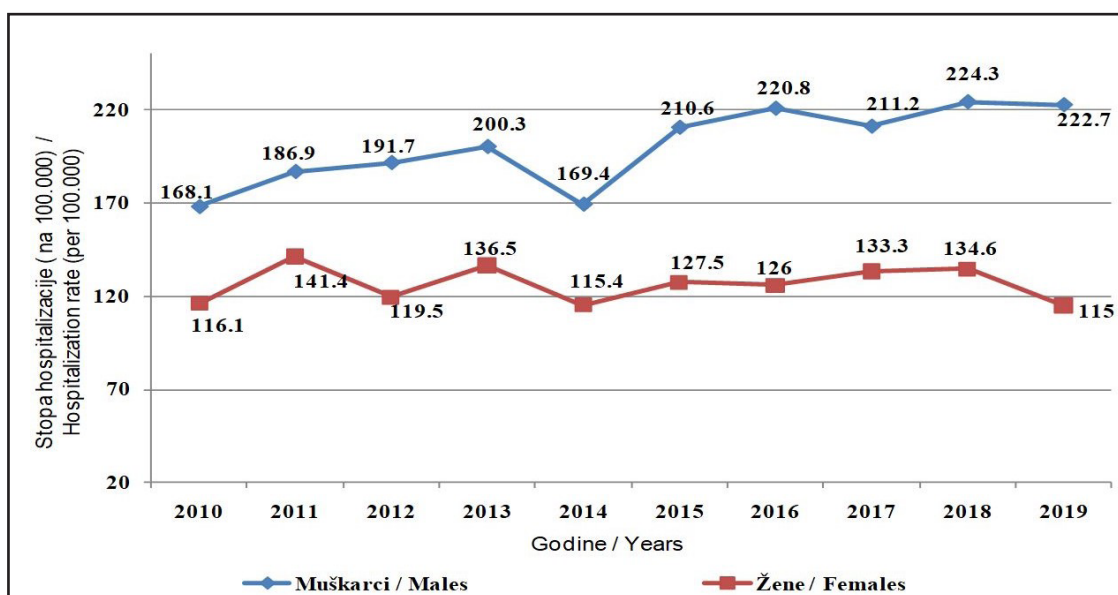
### Rezultati

U Južnobanatskom okrugu, vanbolnički morbiditet KRK je u stalnom porastu tokom deset poslednjih godina i kretao se od 167,0 obolelih na 100.000 stanovnika u 2010. godini do 289,6 obolelih na 100.000 u 2019. godini (grafikon 1).

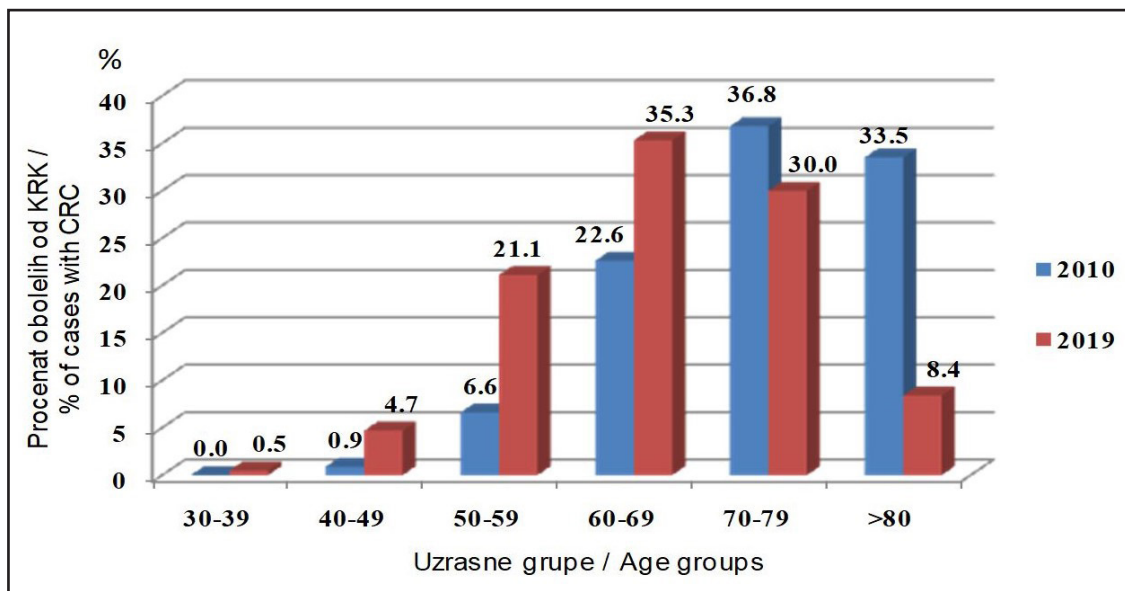
U ovom okrugu stacionarnu zdravstvenu zaštitu za 279.281 gravitirajućih stanovnika pružaju dve opšte bolnice: Opšta bolnica Pančevo i Opšta bolnica Vršac sa ukupno 950 standardnih bolničkih postelja. U posmatranom periodu od 2010. do 2019. godine, u Opštoj bolnici u Vršcu je zbog KRK prosečno godišnje

lečeno 75 pacijenata, a u Opštoj bolnici u Pančevu 139, što je ukupno 214. Prosečna dužina lečenja pacijenata sa KRK je bila 8,4 dana. Oko 2/3 hospitalizovanih osoba sa KRK u ove dve opšte bolnice je bilo starosti 60-79 godina u 2019. godini, a 2010. godine starosti 70 i više godina (grafikon 2).

Stopa hospitalizacije KRK u obe opšte bolnice na području Južnobanatskog okruga su rastle tokom vremena i imale su, tokom svih deset godina, veće vrednosti kod muškarca nego kod žena. Najniže vrednosti se kod žena registruju u 2014. godini, a kod muškaraca u 2010. godini.



**Grafikon 3.** Stopa hospitalizacije (na 100.000) kolorektalnog karcinoma (KRK) (C18-C21) u Južnobanatskom okrugu u periodu 2010-2019. godine, uzrast 18 i više godina, prema polu



**Figure 2.** Distribution of hospital patients treated for colorectal cancer in relation to age, the South Banat district, 2010 and 2019, age 18 and over

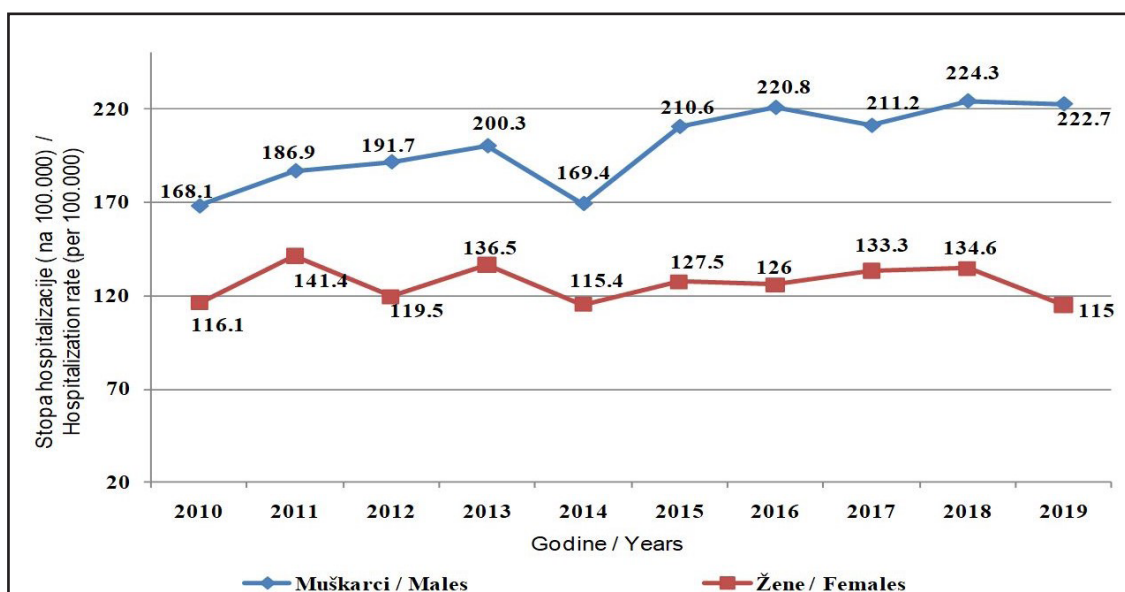
District according to the census from 2011. The mortality rate was calculated as the ratio of the number of people who died from CRC on the territory of the South Banat District during one year and the number of people from that district. The population was determined according to the census from 2011. All calculated rates were expressed per 100.000 people.

### Results

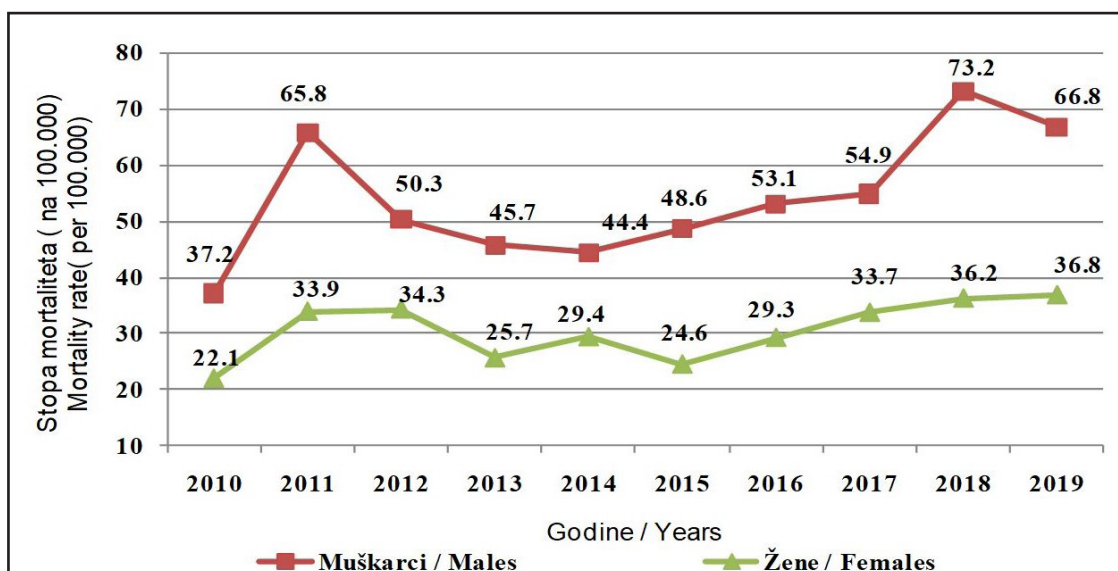
In the South Banat District, outpatient morbidity of CRC has been constantly on the rise in the last ten years and it ranged from 167.0

people who developed the disease per 100,000 in 2010 to 289.6 people who developed this disease per 100,000 in 2019 (Figure 1).

In this district, stationary health care for 279,281 people, who gravitate there, is offered by two general hospitals: General Hospital Pancevo and General Hospital Vrsac with a total of 950 standard hospital beds. In the observed period from 2010 to 2019, on average, 75 patients were treated for CRC annually in the General Hospital in Vrsac, while 139 patients were treated in the General Hospital Pancevo, that is, 214 in total. The average length of treatment of patients with



**Figure 3.** Hospitalization rates (per 100,000) because colorectal cancer (CRC) (C18-C21) in the South Banat District in the period 2010-2019, age 18 and over, according to gender



**Grafikon 4.** Stopa mortaliteta (na 100.000) od kolorektalnog karcinoma (KRK) (C18-C21) u Južnibanatskom okrugu u periodu 2010-2019. godine, uzrast 18 i više godina, prema polu

Kod žena se registruje značajniji pad stope hospitalizacije u 2019. godini (grafikon 3).

Svake godine zbog ove maligne bolesti životna teritorija okruga izgubi prosečno 110 stanovnika godišnje. Kod oba pola stopa mortaliteta KRK je u porastu tokom posmatranog perioda (grafikon 4), a tokom čitavog posmatranog perioda stope su više kod muškaraca nego kod žena.

Kod muškog pola uočava se pad stope mortaliteta u periodu 2011-2014. godine, a kod žena se, takođe, u dva navrata (2011-2013. i 2014-2015. godine) beleži pad stope mortaliteta.

U 2019. godini, među svim umrlim muškarcima u Južnibanatskom okrugu, rak KRK je bio deveti vodeći uzrok umiranja, sa procentualnim učešćem među svim umrlima od 3,1%, a u populaciji žena trinaesti, sa procentualnim učešćem od 1,8% (tabele 1 i 2). Kod muškaraca se u posmatranom desetogodišnjem periodu procentualno učešće KRK u ukupnom mortalitetu povećalo sa 2,4% u 2010. godini na 3,1% u 2019. Kod žena, takođe, postoji blagi porast procentualnog učešća KRK među svim umrlima sa 1,5% u 2010. godini na 1,8% u 2019. godini.

Od malignih bolesti kod muškaraca jedino zloćudni tumor bronha i pluća ima veći rang i veći procentualni udeo u ukupnom mortalitetu od KRK (na četvrtom je mestu sa procentualnim učešćem od 6,4% u 2019. godini). Kod žena zloćudni tumor dušnika i pluća (3,7%), zloćudni tumor dojke (3,2%) i zloćudni tumori ženskih polnih organa (2,5%) imaju veće procentualno

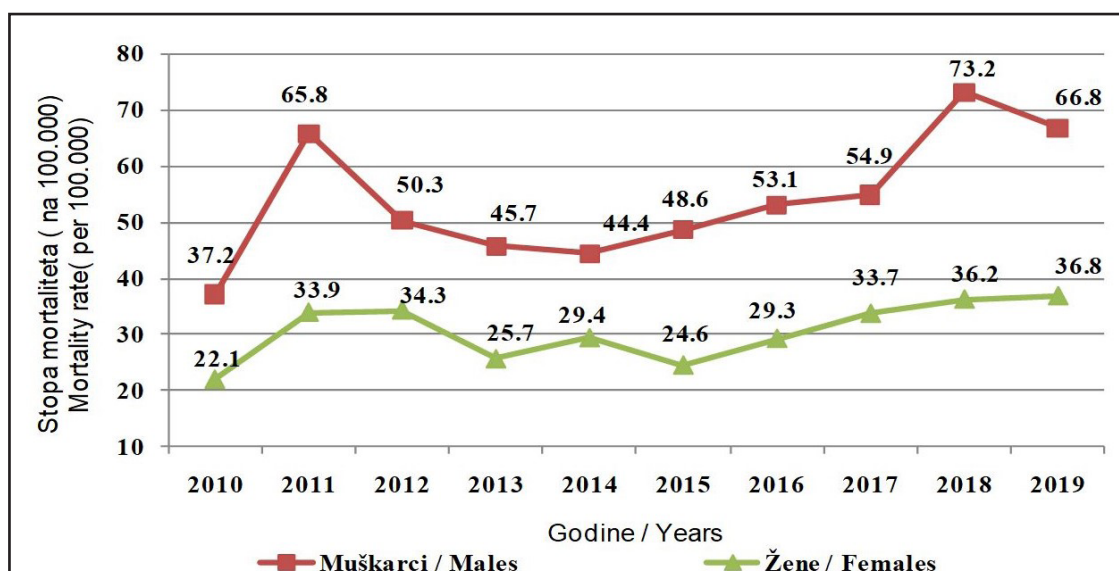
učešće u ukupnom mortalitetu nego KRK i nalaze se na osmom, devetom i desetom mestu među deset vodećih uzroka smrti kod žena u 2019. godini.

U 2019. godini najveći broj umrlih od KRK (oko 2/3) je bio u populaciji muškaraca i žena Južnibanatskog okruga uzrasta 60-79 godina (grafikon 5). U odnosu na 2010. godinu, u 2019. godini kod oba pola dolazi do pojave smrtnih ishoda i u uzrastu 50-59 godina (11,3% je umrlih muškaraca i 19,3% žena tog uzrasta).

## Diskusija

Prema podacima GLOBOCAN-a, KRK u svetu predstavlja veliki javno zdravstveni problem, jer je 2018. godine, registrovano 1.849.518 novoobolelih i 880.792 umrlih (3). KRK predstavlja treći vodeći uzrok obolevanja među svim malignim tumorima u svetu (iza raka pluća i raka dojke), a četvrti je uzrok umiranja (4). Srbija je na osnovu stope incidencije za KRK na 22. mestu u Evropi, a po stopi mortaliteta na šestom mestu (5).

U Južnibanatskom okrugu tokom poslednjih deset godina dolazi do porasta vanbolničkog morbiditeta KRK sa 167,0 obolelih na 100.000 stanovnika u 2010. godini, na 289,6 obolelih na 100.000 u 2019. godini. Prema podacima iz literature, petogodišnja prevalencija KRK (na 100.000) za evropske zemlje iznosi 188,7, za područje Severne Amerike 146,8, a za svetsku populaciju 62,8 (6). Međutim, veći vanbolnički



**Figure 4.** Colorectal cancer (CRC) (C18-C21) mortality rate (per 100,000) in the South Banat District in the period 2010-2019, age 18 and over, according to sex

CRC was 8.4 days. Around 2/3 of hospitalized patients with CRC in these two general hospitals were aged 60-79 years in 2019, and 70 and older in 2010 (Figure 2).

The hospitalization rates for CRC in both general hospitals on the territory of the South Banat District increased over time and they were higher in men than in women during all ten years. The lowest values in women were registered in 2014, while in men they were registered in 2010. In females, a significant decrease in the hospitalization rate was registered in 2019 (Figure 3).

On average, 110 people lose their lives due to this malignant disease on the territory of this district each year. In both males and females, the mortality rate of CRC was on the rise during the observed period (Figure 4), while during the whole observed period rates were higher in males than in females.

In males, the decrease in the mortality rate was noticed from 2011 to 2014, while in females this decrease was noted during two time periods (2011-2013 and 2014-2015).

In 2019, among all males who died in the South Banat District, colorectal cancer was the ninth leading cause of death with the share of 3.1% of all deaths, while in the population of females it was the thirteenth leading cause, with the share of 1.8% (Tables 1 and 2). In males in the observed time period of ten years, the share in percentages of CRC in total mortality

increased from 2.4% in 2010 to 3.1% in 2019. In females, the share in percentages of CRC in relation to all deaths increased from 1.5% in 2010 to 1.8% in 2019.

Of all malignant diseases in males, only the malignant bronchial and lung tumors were ranked higher and had a higher share in total mortality than CRC (it was in the fourth place with the share of 6.4% in 2019). In females, the malignant tumor of trachea and lungs (3.7%), the malignant breast tumor (3.2%) and malignant tumors of female genital organs (2.5%) had a higher share in total mortality than CRC and they were on the eighth, ninth and tenth place among the ten leading causes of death in 2019.

In 2019, the greatest number of deaths from CRC (around 2/3) was in the population of males and females from the South Banat District aged 60-79 (Figure 5). In comparison to 2010, there came to the deathly outcomes among people aged 50-59 in 2019 (there were 11.3% of men and 19.3% of women who died and were in that age group).

## Discussion

According to the GLOBOCAN data, CRC is a major public health problem, because in 2018 there were 1.849.518 registered people and 880.792 deaths (3). CRC is the third leading cause of developing disease among all malignant tumors in the world (behind lung and breast cancer), while it is the fourth cause of dying (4).



**Tabela 1.** Deset vodećih uzroka smrti u populaciji muškaraca u Južnobanatskom okrugu u 2010. i 2019. godini

Rang za 2019. <i>Rank for 2019</i>	MKB-10 šifra/ <i>ICD-10 code</i>	Uzrok smrti/ <i>Cause of death</i>	Broj umrlih (2019.)/ <i>Number of deaths (2019)</i>	%	Broj umrlih (2010.)/ <i>Number of deaths (2010)</i>	%
1	I46	Zastoj srca/ <i>Heart failure</i>	241	11.0	77	3.5
2	R00-R99	Simptomi, znaci i patološki klinički i laboratorijski nalazi/ <i>Symptoms, signs and pathological clinical and laboratory findings</i>	195	8,9	58	2.7
3	I10-I15	Bolesti uzrokovane povišenim krvnim pritiskom/ <i>Diseases caused by high blood pressure</i>	161	7.4	183	8.4
4	C34	Zloćudni tumor dušnika i pluća / <i>Malignant tumor of the trachea and lungs</i>	139	6.4	182	8.3
5	I42	Oboljenje srčanog mišića/ <i>Heart muscle disease</i>	153	7.0	279	12.8
6	I60-I69	Bolesti krvnih sudova mozga/ <i>Diseases of the blood vessels of the brain</i>	131	6.0	167	7.6
7	I20-I25	Ishemijske bolesti srca / <i>Ischemic heart disease</i>	120	5.5	239	10.9
8	I50	Nedovoljna funkcija srca/ <i>Insufficient heart function</i>	117	5.3	66	3.0
9	C18-C21	Zloćudni tumori debelog creva i rektuma/ <i>Malignant tumors of the colon and rectum</i>	67	3.1	52	2.4
10	J40-J47	Hronične bolesti donjeg dela sistema za disanje/ <i>Chronic diseases of the lower respiratory system</i>	55	2.5	52	2.4
11		Ostali uzroci smrti/ <i>Other causes of death</i>	808	36.9	833	38
		Ukupno umrli/ <i>Total deaths</i>	2187	100	2188	100

morbiditet ne mora obavezno da znači i veći broj bolesnih od KRK u populaciji, već može biti posledica češćeg korišćenja zdravstvene službe ili nepravilnog evidentiranja hroničnih bolesti više puta tokom godine.

Porast broja obolelih od KRK u svetu i regionu pripisuje se, pre svega, prihvatanju „zapadnog“ načina života, kao i porastu gojaznih, fizički neaktivnih, pušača i ekscesivnih konzumenata

alkohola i crvenog mesa. Potencijalno smanjenje broja obolelih postiže se širokom primenom mera prevencije i boljim modalitetima lečenja, pogotovo u ranijim stadijumima bolesti (7).

U našem radu je registrovan porast stope hospitalizacije KRK kod oba pola, i one su više kod muškaraca nego kod žena tokom čitavog desetogodišnjeg perioda. U istraživanju brazilskih autora takođe je uočen porast stope

**Table 1.** Ten leading causes of death in the population of men in the South Banat District in 2010 and 2019

Rang za 2019./ Rank for 2019	MKB-10 šifra/ ICD-10 code	Uzrok smrti/ Cause of death	Broj umrlih (2019.)/ Number of deaths (2019)	%	Broj umrlih (2010.)/ Number of deaths (2010)	%
1	I46	Zastoj srca/ Heart failure	241	11.0	77	3.5
2	R00-R99	Simptomi, znaci i patološki klinički i laboratorijski nalazi/ Symptoms, signs and pathological clinical and laboratory findings	195	8,9	58	2.7
3	I10-I15	Bolesti uzrokovane povišenim krvnim pritiskom/ Diseases caused by high blood pressure	161	7.4	183	8.4
4	C34	Zloćudni tumor dušnika i pluća/ Malignant tumor of the trachea and lungs	139	6.4	182	8.3
5	I42	Oboljenje srčanog mišića/ Heart muscle disease	153	7.0	279	12.8
6	I60-I69	Bolesti krvnih sudova mozga/ Diseases of the blood vessels of the brain	131	6.0	167	7.6
7	I20-I25	Ishemijske bolesti srca / Ischemic heart disease	120	5.5	239	10.9
8	I50	Nedovoljna funkcija srca/ Insufficient heart function	117	5.3	66	3.0
9	C18-C21	Zloćudni tumori debelog creva i rektuma/ Malignant tumors of the colon and rectum	67	3.1	52	2.4
10	J40-J47	Hronične bolesti donjeg dela sistema za disanje/ Chronic diseases of the lower respiratory system	55	2.5	52	2.4
11		Ostali uzroci smrti/ Other causes of death	808	36.9	833	38
		Ukupno umrli/ Total deaths	2187	100	2188	100

Serbia is according to the incidence rate for CRC on the 22<sup>nd</sup> place in Europe, and according to the mortality rate in the sixth place (5).

In the South Banat District during the last ten years, the outpatient morbidity of CRC has increased from 167.0 ill people per 100,000 in 2010 to 289.6 ill people per 100,000 in 2019. According to the data from the literature, the five-year prevalence of CRC (per 100,000) in the

European countries amounted to 188.7, while in the North America it was 146.8, and for the world population it was 62.8 (6). However, higher outpatient morbidity does not necessarily mean that the number of people who developed CRC is higher, but it can be the consequence of more frequent use of health care services or incorrect records of chronic diseases several times a year.

The increase in the number of people who

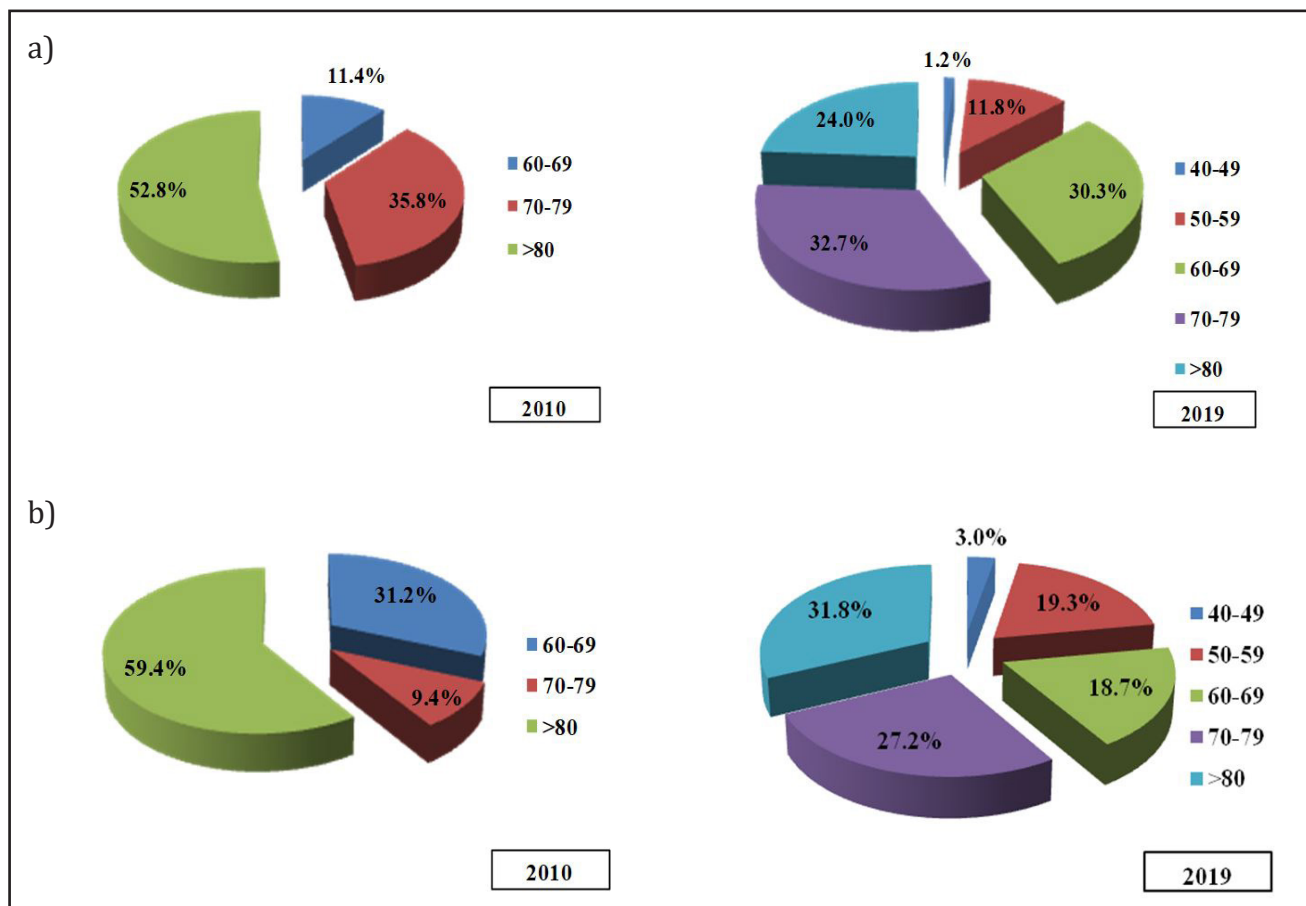
**Tabela 2.** Deset vodećih uzroka smrti u populaciji žena u Južnobanatskom okrugu u 2010. i 2019. godini

Rang za 2019./ Rank for 2019	MKB-10 šifra/ ICD-10 code	Uzrok smrti/ Cause of death	Broj umrlih (2019.)/ Number of deaths (2019)	%	Broj umrlih (2010.)/ Number of deaths (2010)	%
1	I46	Zastoj srca/ Heart failure	239	11.9	151	7.1
2	I10-I15	Bolesti uzrokovane povišenim krvnim pritiskom/ Diseases caused by high blood pressure	227	11.3	270	12.7
3	I42	Oboljenje srčanog mišića/ Heart muscle disease	218	10.8	402	18.9
4	R00-R99	Simptomi, znaci i patološki klinički i laboratorijski nalazi/ <i>Symptoms, signs and pathological clinical and laboratory findings</i>	162	8.0	34	1.6
5	I60-I69	Bolesti krvnih sudova mozga/ Diseases of the blood vessels of the brain	139	6.9	195	9.2
6	I50	Nedovoljna funkcija srca/ Insufficient heart function	111	5.5	73	3.4
7	I20-I25	Ishemijske bolesti srca/ Ischemic heart disease	97	4.8	210	9.9
8	C34	Zloćudni tumor dušnika i pluća/ Malignant tumor of the trachea and lungs	75	3.7	65	3.1
9	C50	Zloćudni tumor dojke/ Malignant breast tumor	64	3.2	59	2.8
10	C51-C58	Zloćudni tumori ženskih polnih organa/ Malignant tumors of the female genital organs	51	2.5	64	3.0
11	J40-J47	Hronične bolesti donjeg dela sistema za disanje/ Chronic diseases of the lower respiratory system	41	2.0	27	1.3
12	E10-E14	Šećerna bolest/ Diabetes mellitus	39	1.9	66	3.1
13	C18-C21	Zloćudni tumori debelog creva i rektuma/ Malignant tumors of the colon and rectum	37	1.8	32	1.5
14		Ostali uzroci smrti/ Other causes of death	514	25.5	474	22.3
		Ukupno umrli/ Total deaths	2014	100	2122	100

**Table 2.** Ten leading causes of death in the population of women in the South Banat District in 2010 and 2019

Rang za 2019. / Rank for 2019	MKB-10 šifra / ICD-10 code	Uzrok smrti / Cause of death	Broj umrlih (2019.) / Number of deaths (2019)	%	Broj umrlih (2010.) / Number of deaths (2010)	%
1	I46	Zastoj srca / Heart failure	239	11.9	151	7.1
2	I10-I15	Bolesti uzrokovane povišenim krvnim pritiskom / Diseases caused by high blood pressure	227	11.3	270	12.7
3	I42	Oboljenje srčanog mišića / Heart muscle disease	218	10.8	402	18.9
4	R00-R99	Simptomi, znaci i patološki nalazi / Symptoms, signs and pathological clinical and laboratory findings	162	8.0	34	1.6
5	I60-I69	Bolesti krvnih sudova mozga / Diseases of the blood vessels of the brain	139	6.9	195	9.2
6	I50	Nedovoljna funkcija srca / Insufficient heart function	111	5.5	73	3.4
7	I20-I25	Ishemijske bolesti srca / Ischemic heart disease	97	4.8	210	9.9
8	C34	Zloćudni tumor dušnika i pluća / Malignant tumor of the trachea and lungs	75	3.7	65	3.1
9	C50	Zloćudni tumor dojke / Malignant breast tumor	64	3.2	59	2.8
10	C51-C58	Zloćudni tumori ženskih polnih organa / Malignant tumors of the female genital organs	51	2.5	64	3.0
11	J40-J47	Hronične bolesti donjeg dela sistema za disanje / Chronic diseases of the lower respiratory system	41	2.0	27	1.3
12	E10-E14	Šećerna bolest / Diabetes mellitus	39	1.9	66	3.1
13	C18-C21	Zloćudni tumori debelog creva i rektuma / Malignant tumors of the colon and rectum	37	1.8	32	1.5
14		Ostali uzroci smrti / Other causes of death	514	25.5	474	22.3
		Ukupno umrli / Total deaths	2014	100	2122	100





**Grafikon 5.** Distribucija umrlih od kolorektalnog karcinoma prema uzrastu u populaciji muškaraca (a) i žena (b) Južnobanatskog okruga u 2010. i 2019. godini

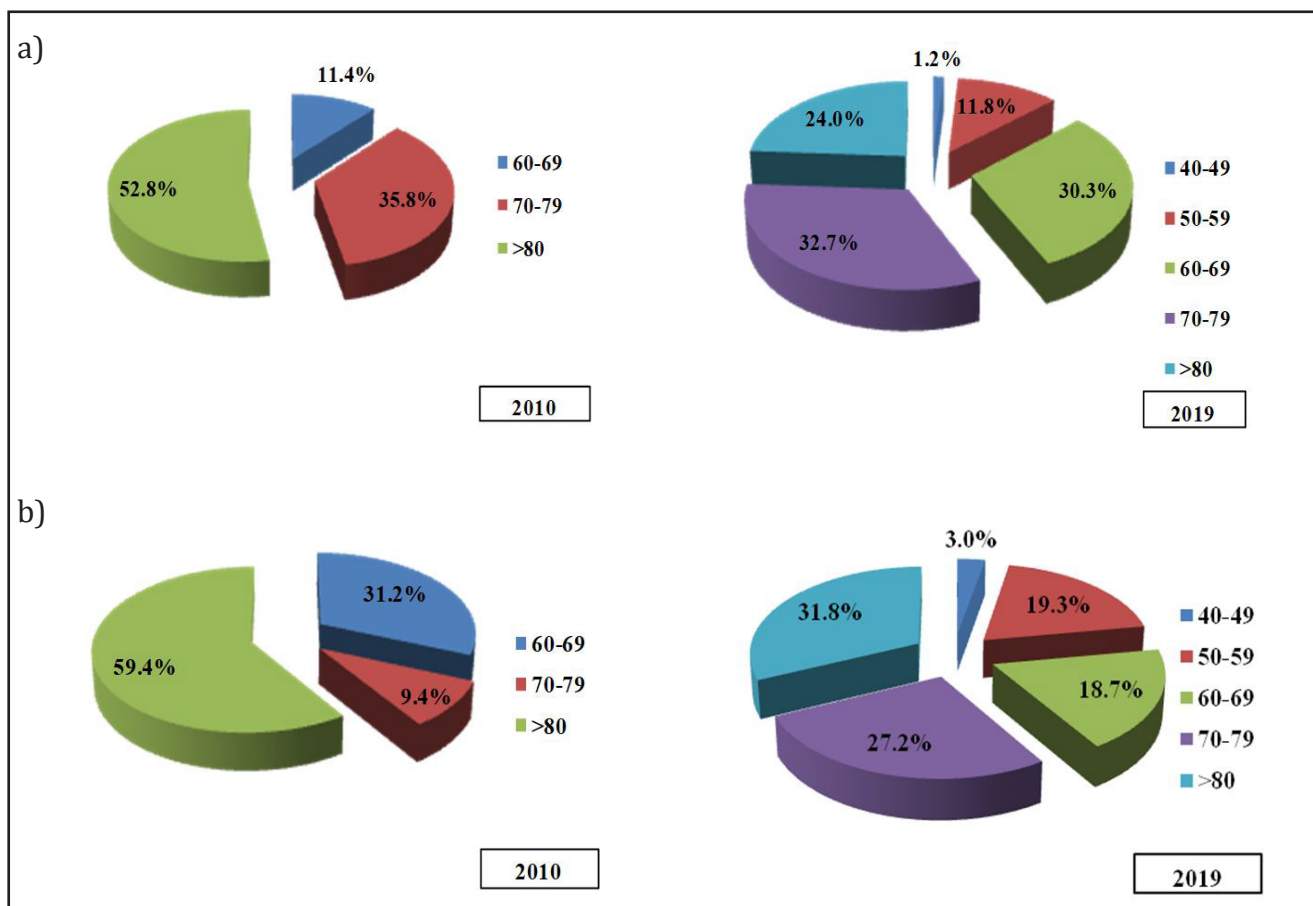
hospitalizacije u periodu 2002-2016. godine, a stopa hospitalizacije KRK za muškarce (35,8 na 100.000) je bila, tokom posmatranog perioda, viša nego kod žena (33,6 na 100.000). Najviša stopa hospitalizacije zabeležena je za uzrast 70-79 godina i iznosila je 175,4 na 100.000 (8), što je slično rezultatima našeg israživanja.

U Južnobanatskom okrugu, prosečna dužina bolničkog lečenja za lica hospitalizovana zbog KRK je bila  $8,4 \pm 11,6$  dana, a prosečna starost lečenih  $66,8 \pm 10,7$  godina. Davidović i saradnici navode da je prosečna starost lica hospitalizovanih zbog hirurškog lečenja KRK u Opštoj bolnici u Kikindi  $67,4 \pm 10,4$  godina, a prosečan broj dana hospitalizacije po pacijentu  $18,7 \pm 11,0$  dana (9). U doktorskoj disertaciji Krdžića (10) prosečna starost pacijenata hospitalizovanih zbog KRK je bila  $67,3 \pm 10,3$  godine, a dužina njihovog boravka u bolnici  $12,4 \pm 7,2$  dana.

U Južnobanatskom okrugu, stopa mortaliteta od KRK je u porastu i tokom svih posmatranih godina viša je kod muškaraca nego žena (u 2019. iznosi 66,8 na 100.000 za muški a 36,8 na

100.000 za ženski pol). Wong i saradnici navode u svom istraživanju da na nivou evropskih zemalja stopa mortaliteta od KRK iznosi 32,6 na 100.000, a na svetskom nivou 11,5 na 100.000 (6). Slične rezultate dobili su Petrović i saradnici (11). U opštini Niš prosečna godišnja stopa mortaliteta (na 100.000) od KRK, u periodu od 1986. do 1997. godine, iznosila je 29,4 (kod muškaraca 30,7, a kod žena 19,3). Takođe, beleži se trend porasta stope mortaliteta KRK kod oba pola, ali on nije bio statistički značajan. Kod oba pola, najveća stopa mortaliteta za KRK u opštini Niš je registrovana kod osoba starijih od 70 godina, a sa godinama starosti, raste stopa mortaliteta (11). U našem radu 87% muškaraca i 78% žena umrlih od KRK je bilo starije od 60 godina, a u doktorskoj disertaciji Petrovića većina umrlih od KRK (80%) su bile osobe starije od 65 godina (12).

Razlozi povećanog trenda vanbolničkog morbiditeta, hospitalizacije i mortaliteta stanovništva Južnobanatskog okruga su brojni. Deo ovog porasta može se objasniti većom izloženošću populacije brojnim faktorima



**Figure 5.** Distribution of deaths from colorectal cancer by age in the population of men (a) and women (b) of the South Banat District in 2010 and 2019

developed CRC in the world and region is ascribed firstly to the “western” way of life, as well as to the increase of obese people, physically inactive people, smokers and excessive consumers of alcohol and red meat. A potential decrease in the number of ill people is achieved by the wide application of preventive measures and better modalities of treatment, especially in the earlier stages of diseases (7).

In our study, the increase of the hospitalization rate of CRC was registered in both sexes and these rates were higher in men than in women during the whole ten year period. In the research of Brazilian authors, the increase of hospitalization rate was also noted in the period 2002-2017, while the hospitalization rate of CRC was higher in men (35.8 per 100,000) than in women (33.6 per 100,000) during the observed time period. The highest hospitalization rate was noted in the age group 70-79 years and it amounted to 175.4 per 100,000 (8), which is similar to the results of our research.

In the South Banat District, the average length of hospital treatment for people hospi-

talized due to CRC was  $8.4 \pm 11.6$  days, while the average age of treated people was  $66.8 \pm 10.7$  years. Davidovic and associates state that the average age of people hospitalized due to the surgical treatment of CRC at the General Hospital in Kikinda was  $67.4 \pm 10.4$  years, while the average number of hospitalization days was  $18.7 \pm 11.0$  days per patient (9). In the doctoral dissertation of Krdzic (10), the average age of patients hospitalized due to CRC was  $67.3 \pm 10.3$  years, while the length of their stay in the hospital was  $12.4 \pm 7.2$  days.

In the South Banat District, the mortality rate of CRC was on the rise and during all years that we observed it was higher in men than in women (in 2019 it amounted to 66.8 per 100,000 for men and 36.8 per 100,000 for women). Wong and associates state in their study that at the level of European countries the mortality rate of CRC amounted to 32.6 per 100,000, and at the world level 11.5 per 100,000 (6). Similar results were obtained by Petrovic and associates (11). In the municipality of Nis, the average annual mortality rate (per 100,000) of CRC amounted

rizika. Eventualni problemi sa dostupnošću zdravstvene službe, takođe, doprinose smanjenju stepena preživljavanja pacijenata i imaju udela u porastu broja hospitalizacija i umiranja. Povećanje kapaciteta zdravstvenog sistema sa kojima se uspostavlja rana dijagnoza bolesti, obuka i edukacija kadra i napredak medicinskih tehnologija, takođe, mogu doprineti porastu vanbolničkog morbiditeta i hospitalizacije, a smanjivanju mortaliteta (8).

### Zaključak

U cilju unapređenja zdravlja stanovnika Južnobanatskog okruga neophodna je redovna kontrola zdravlja i sprovođenje skrining programa za rano otkrivanje KRK što bi doprinelo ranom otkrivanju bolesti u populaciji pod rizikom. Intenzivnijom promocijom zdravlja i zdravih stilova života može se doprineti redukovanju poznatih faktora rizika odgovornih za nastanak KRK u populaciji: nepravilna ishrana (hrana bogata zasićenim mastima, a sa malim unosom vlakana), gojaznost, pušenje, postojanje crevnih polipa, nedostatak fizičke aktivnosti i drugo.

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to 29.4 from 1986 to 1997 (30.7 in men and 19.3 in women). Also, the trend in increase of mortality rates of CRC was noted in both sexes, but it was not statistically significant. In both sexes, the highest mortality rate for CRC in the municipality of Nis was registered in people older than 70, and the mortality rate increases as people get older (11). In our study, 87% of men and 78% of women who died from CRC were older than 60, and in the doctoral dissertation of Petrovic, the majority of people who died from CRC (80%) were people older than 65 (12).

The reasons for the increased trend of outpatient morbidity, hospitalization and mortality among the population of the South Banat District are numerous. A part of this increase can be explained by the higher exposure of this population to numerous risk factors. Potential problems with the availability of health care services also contribute to the decrease in the level of patients' survival and they also participate in the increase in the number of hospitalizations and deaths. The increase of the capacities of the health care system together with the early diagnosis of disease, training and education of staff and the advance of medical technologies can also contribute to the increase of outpatient morbidity and hospitalization, and to the decrease of mortality (8).

## Conclusion

In order to improve the health of the population from the South Banat District, it is necessary to control health regularly and conduct screening programs for the early detection of CRC, which would contribute to the early detection of this disease in the population at risk. More intense promotion of health and healthy lifestyles can contribute to the reduction of known risk factors responsible for the occurrence of CRC in the population: poor nutrition (food rich in saturated fats, with

the small intake of fibers), obesity, smoking, the existence of intestinal polyps, the lack of physical activity, etc.

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