

EPIDEMIOLOGY OF COLORECTAL CANCER IN CROATIA AND WORLDWIDE

Mario Šekerija¹, Tihana Marković²

¹Croatian National Cancer Registry, Croatian Institute of Public Health,
Zagreb, Croatia;

²Department of Oncology, University Hospital Center Zagreb,
Zagreb, Croatia

Summary

Colorectal cancer (CRC) is the third most common cancer in men worldwide (746,000; 10%) and second most common in women (614,000 cases; 9.2%). Incidence and mortality are on the rise in many developing countries, closing the gap to the western, industrialized populations. In Croatia it is the second malignant cause of death in both males and females, while it ranks second in female incidence and third in male incidence. Trends in CRC in Croatia still display an increase in the standardized rates of incidence and mortality, however, the data for five-year survival for Croatia from recently published international studies indicate an improvement. The epidemiological data clearly point to CRC as one of the most important health issues of Croatian society. Its increasing incidence and mortality trends need to be tackled with a multidisciplinary approach, ensuring the availability of new treatment options and drugs when necessary, but also insisting on the secondary prevention (population-based screening) and primary prevention (changes in nutritional habits and levels of physical activity with educational activities targeted towards wider audience).

Keywords: colorectal cancer; incidence; mortality; prevalence; Croatia.

The International Agency for Research on Cancer (IARC) estimates that over 14 million people throughout the world develop cancer every year, while 8,2 million die of cancer annually; that number will increase to 19,3 million incident cases and 11,4 million deaths by year 2025 [1]. Colorectal cancer (CRC) is an important health burden throughout the world; according to GLOBOCAN 2012 [2] 1.36 million new cases of CRC in the world occur each year, 447,000 of which in Europe. It makes it the third most common cancer in men worldwide (746,000; 10%) and second most

common in women (614,000 cases; 9.2%). The highest incidence rates of CRC are attributable to Australia and New Zealand; the highest mortality rates are observed in Central and Eastern Europe. The incidence of CRC is increasing in many developing countries with rates in the countries of Eastern Europe that recently underwent a major economic transition already reaching or exceeding those of the industrial western countries [3]. Reports from Eastern Asian countries also indicate a rapid rise in CRC incidence, closing the gap to Western populations [4,5].

The most recent data for Croatia (incidence for 2012 (6); mortality for 2013 [7]) indicate that, in males, colorectal cancer is ranked third in incidence (1.700 new cases; crude incidence rate 82.8/100,000) and second in cancer causes of death (1.182 deaths; crude mortality rate 57.6/100,000). In females, colorectal cancer is ranked second in incidence (1.261 new cases; crude incidence rate 57.3/100,000) and second in cancer related mortality (855 deaths; crude mortality rate 38.8/100,000). The distribution of stages for CRC registered in the Croatian Cancer Registry in 2012 indicates that it was diagnosed at the localised stage in 20% of cases, with regional spreading or regional metastases in 38% of the cases, in 25% there were distant metastases at time of diagnosis, while for 17% of the cases the information on stage at diagnosis was missing.

According to the GLOBOCAN 2012 estimates [2], in males in Europe, Croatia is ranked 8th in incidence (age-standardized rate (ASR(W)) 44.2/100,000) and 3rd in mortality (ASR(W) 26.7/100,000); higher mortality rates are observed only in Hungary and Slovakia. For women, Croatia is ranked 16th in incidence (24.7/100,000) and 2nd in mortality (ASR(W) 13.0/100,000), with only Hungary having higher mortality rates. The estimated 5-year prevalence is 293.3/100,000 in males and 204.8/100,000 in females [1]. Also, the cumulative risk (age 0-74) of incident colorectal cancer for Croatia was 5.25% in males and 2.86% for females, as shown in figures 1 and 2. The discrepancy between the incidence and mortality rank of Croatia in Europe strongly indicates the need for improvement of prevention and treatment.

As for epidemiological situation in Croatia, a recent publication [8] described increasing trends in incidence and mortality of CRC in men in the period 1988-2008, with estimated annual percent changes (EAPC) of +2.9% for incidence and +2.1% for mortality. In women, the increase in incidence rates was not statistically significant, while mortality rates showed an increase for the period from 1994-2008, with EAPC of +1.1%. Given the high incidence and increasing mortality, Croatian Society of Coloproctology and Croatian Society of Oncology launched an incentive for quality control and referral improvements for colorectal cancer patients, recognizing the current lack of availability of some treatment modalities at different hospitals [9].

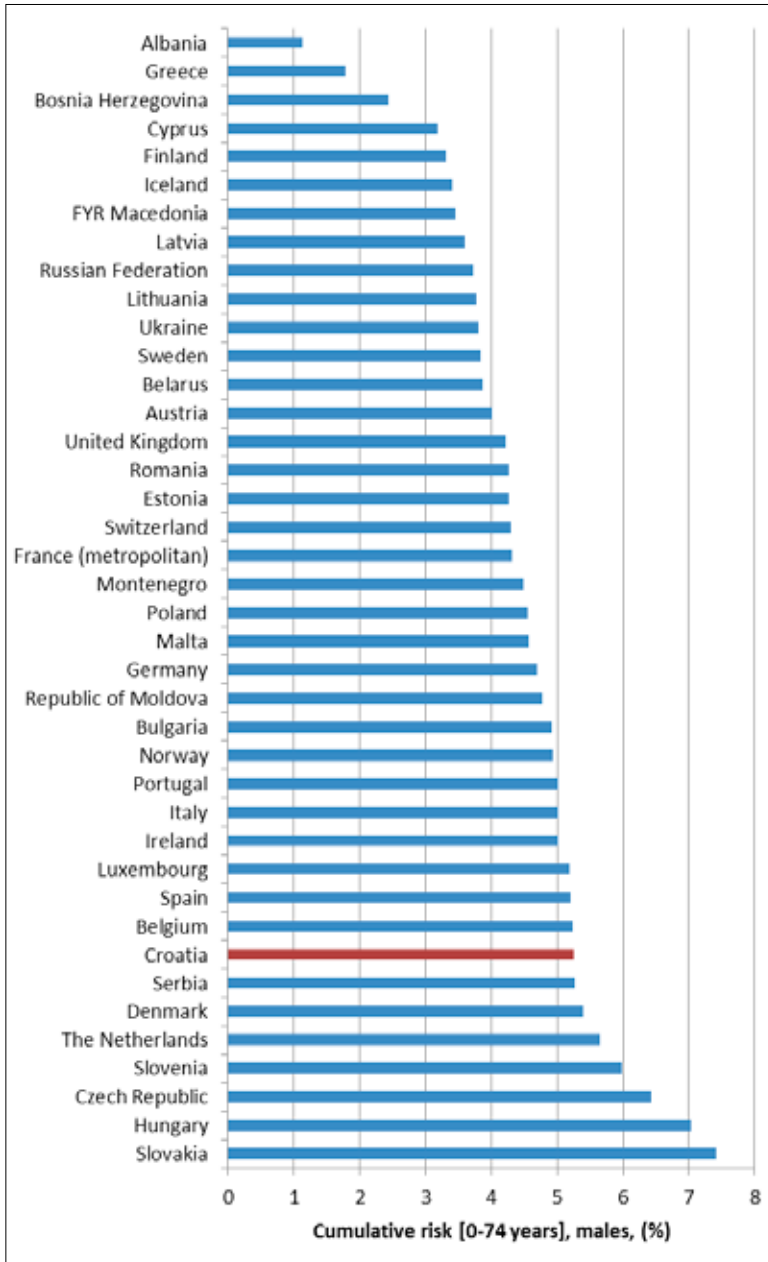


Figure 1. Cumulative risk (0-74 years) of incident colorectal cancer in Europe, males. Source: GLOBOCAN 2012 (2)

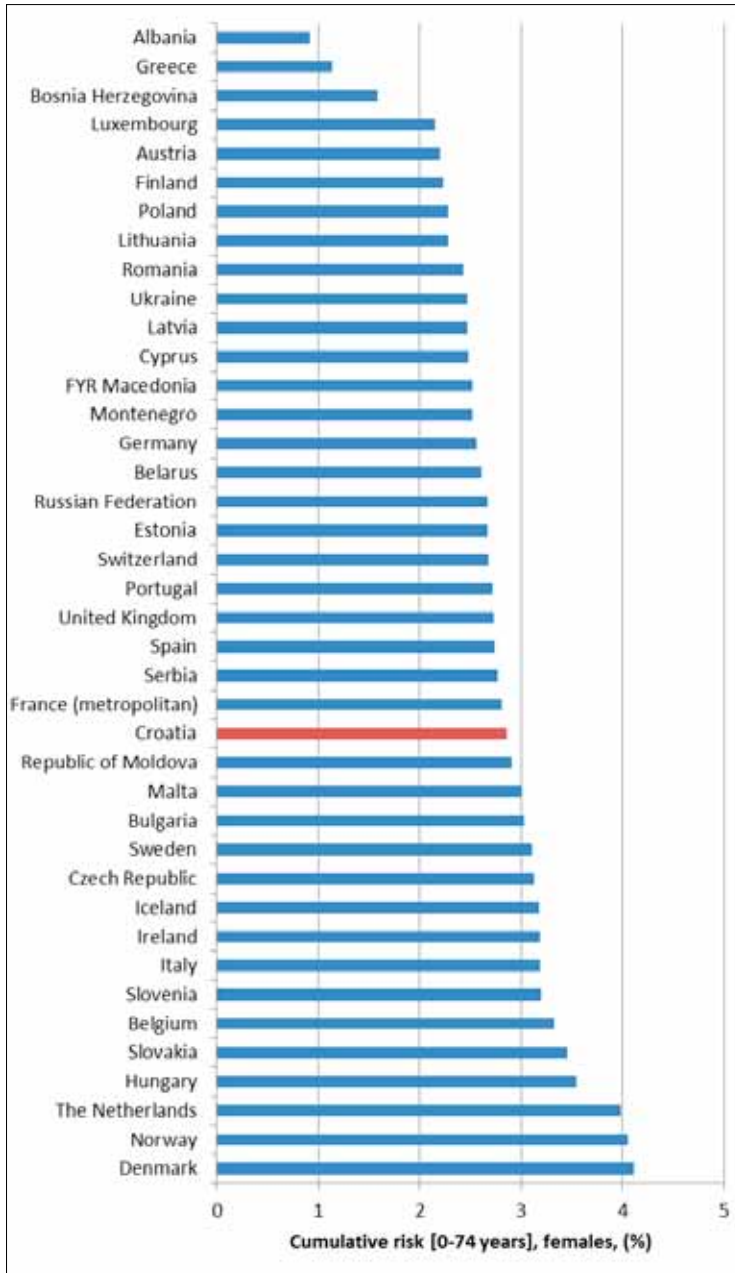


Figure 2. Cumulative risk (0-74 years) of incident colorectal cancer in Europe, females. Source: GLOBOCAN 2012 (2)

The EUROCARE-5 study has provided data on cancer survival in European countries, and for the first time in the EUROCARE history data from Croatia were included. The study indicated that the 5-year relative survival of Croatian cancer patients (diagnosed from 2000-2007 and followed-up until the end of 2008) was 49.6% for colon cancer, and 48.5% for rectal cancer (both sexes combined) [10]. This was lower than survival in western European countries (Austria 61.2%/61.1%), comparable to similar European countries (Slovakia 51.4%/44.7%) and higher than survival in Eastern European countries such as Bulgaria (45.2%/38.4%).

The recently published CONCORD-2 study evaluated cancer survival for over 25 million cancer patients from 279 cancer registries in 67 countries [11]. The data for Croatia (19,846 eligible patients for colon cancer and 12,240 for rectal cancer) indicate that the net five-year survival has improved from 50.1% in the 1998-1999 period to 52.0% in 2005-2009 period, while the improvement in rectal cancer was from 44.6% in the 1998-1999 period to 48.2% in the 2005-2009 period.

Results of colorectal cancer screening in Croatia indicate that, in the first cycle, a total of 1.404.300 individuals were invited to screening. In total, 288.935 (21%) persons returned the test packages with a correctly placed stool specimen on FOBT cards. Over 10,000 colonoscopies were performed and 576 colon cancers were discovered [12].

In conclusion, the epidemiological data indicate that CRC is one of the most important health issues of Croatian society. Its rising incidence and mortality trends need to be tackled with a multidisciplinary approach, ensuring the availability of new treatment options and drugs, but also insisting on the secondary prevention (population-based screening) and primary prevention (changes in nutritional habits and levels of physical activity, as well as appropriate educational activities).

References

- [1] Stewart BW, Wild CP, eds. *World Cancer Report 2014*. Lyon, France: International Agency for Research on Cancer, 2014.
- [2] Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, et al. *GLOBOCAN 2012 v1. 0, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11*. Lyon, France: International Agency for Research on Cancer; 2013. Visited: <http://globocan.iarc.fr>. 12.1.2014.
- [3] Center MM, Jemal A, Ward E. International trends in colorectal cancer incidence rates. *Cancer epidemiology, biomarkers & prevention : a publication of the American Association for Cancer Research, cosponsored by the American Society of Preventive Oncology*. 2009;18(6):1688-94.

- [4] Sung JJ, Lau JY, Goh KL, Leung WK, Asia Pacific Working Group on Colorectal C. Increasing incidence of colorectal cancer in Asia: implications for screening. *The Lancet Oncology*. 2005;6(11):871-6.
- [5] Bishehsari F, Mahdavinia M, Vacca M, Malekzadeh R, Mariani-Costantini R. Epidemiological transition of colorectal cancer in developing countries: environmental factors, molecular pathways, and opportunities for prevention. *World journal of gastroenterology : WJG*. 2014;20(20):6055-72.
- [6] Incidencija raka u Hrvatskoj. Bilten br. 37. Zagreb: Hrvatski zavod za javno zdravstvo. 2014.
- [7] Poljicanin T, Benjak T, eds. Hrvatski zdravstveno-statistički ljetopis za 2006. godinu. Zagreb: Hrvatski zavod za javno zdravstvo. 2007.
- [8] Kirac I, Sekerija M, Simunovic I, Zgaga L, Velimir Vrdoljak D, Kovacevic D, et al. Incidence and mortality trends of gastric and colorectal cancers in Croatia, 1988-2008. *Croat Med J*. 2012;53(2):124-34.
- [9] Vrdoljak E, Plestina S, Dintinjana RD, Tomas I, Sobat H, Separovic R, et al. [Clinical recommendations for diagnosis, treatment and monitoring of patients with colorectal cancer]. *Liječ Vjesn*. 2011;133(11-12):366-9.
- [10] Gatta G, Botta L, Rossi S, Aareleid T, Bielska-Lasota M, Clavel J, et al. Childhood cancer survival in Europe 1999-2007: results of EUROCORE-5--a population-based study. *The Lancet Oncology*. 2014;15(1):35-47.
- [11] Allemani C, Weir HK, Carreira H, Harewood R, Spika D, Wang XS, et al. Global surveillance of cancer survival 1995-2009: analysis of individual data for 25,676,887 patients from 279 population-based registries in 67 countries (CONCORD-2). *Lancet*. 2015;385(9972):977-1010.
- [12] Antoljak N, Sekerija M. Epidemiology and screening of colorectal cancer. *Libri Oncol*. 2013;41(1-3):3-8.

Sažetak

Epidemiologija kolorektalnog raka u Hrvatskoj i svijetu

Kolorektalni karcinom diljem svijeta zauzima treće mjesto među najčešćim zloćudnim bolestima muškaraca (746.000; 10%) i drugo mjesto učestalosti kod žena (614.000; 9,2%). U zemljama u razvoju incidencija i mortalitet su u porastu, što pridonosi smanjenju raskoraka prema zapadnim, industrijaliziranim populacijama. U Hrvatskoj je kolorektalni karcinom drugi uzrok smrtnosti od zloćudnih bolesti i kod muškaraca i žena. Kod žena se po incidenciji svrstava na drugo mjesto, a kod muškaraca na treće. Trendovi kod kolorektalnog karcinoma u Hrvatskoj još uvijek imaju sklonost porasta u standardiziranim stopama incidencije i mortaliteta, međutim podaci o petogodišnjem preživljenju iz recentno objavljenih međunarodnih studija ukazuju na poboljšanja. Epidemiološki podaci jasno ukazuju kako je kolorektalni karcinom jedna od najvažnijih javnozdravstvenih stavki u Hrvatskoj. Njegova rastuća incidencija i mortalitet upozoravaju na važnost uloge multidisciplinarnog pristupa, osiguranje dostupnosti novih modaliteta liječenja kada je potrebno, kao i inzistiranje na sekundarnoj prevenciji (probir na populacijskoj razini) i primarnoj prevenciji (promjene prehrambenih navika i razine tjelesne aktivnosti, uz edukaciju šire javnosti o problemu kolorektalnog karcinoma).

Ključne riječi: kolorektalni rak; incidencija; mortalitet; prevalencija; Hrvatska.

Corresponding author:

Mario Šekerija

E-mail: mario.sekerija@hzjz.hr