



NATIONAL COLORECTAL CANCER EARLY DETECTION PROGRAM: OVERVIEW OF EXPERIENCE GAINED OVER THE LAST SEVENTEEN YEARS (2007-2024)

ZDRAVKO EBLING¹, BARBARA EBLING², ANTONIO JURETIĆ^{3,4},
RUDIKA GMAJNIĆ¹ and MARIJA STRNAD^{4,5}

¹Faculty of Medicine, Josip Juraj Strossmayer University of Osijek, (retired), Osijek, Croatia

²Faculty of Dental Medicine and Health Osijek, Osijek, Croatia

³Dubrava University Hospital, Zagreb, Croatia

⁴School of Medicine University of Zagreb, Zagreb, Croatia

⁵Croatian Institute of Public Health (retired), Zagreb, Croatia

Summary

The National Colorectal Cancer Early Detection Program was launched towards the end of 2007. The Croatian Society for Oncology contributed significantly to the development of the National Colorectal Cancer Early Detection Program. The Program aims to decrease colorectal cancer (CRC) mortality by 15% in the first five years of the Program's implementation, by covering 75% of the population aged 50-74 years by 2015. The Program is based on fecal occult blood test (FOBT) screening every two years. Program coordinators are the Croatian Institute of Public Health (CIPH) and regional Institutes for Public Health. The proportion of screened persons is 25% and is insufficient for achieving the goals of the National Program. It is considered that family medicine doctors and community health nurses need to get involved more actively in the Program by motivating the persons invited for screening.

KEY WORDS: *colorectal cancer, epidemiology, early detection, screening, National Program*

INTRODUCTION

Cancer incidence and mortality continue to increase globally. According to GLOBOCAN (the World Health Organization's International Agency for Research on Cancer Global Cancer Observatory) data for year 2022, there were around 20 million new cancer cases and around 10 million deaths from cancer worldwide. Cancer incidence and lethality are estimated to increase further. Lung cancer is the most commonly occurring cancer worldwide and is also a leading cause of cancer deaths. Among different cancer types, colorectal cancer is the third in terms of its incidence and second in terms of its lethality(1-3).

Croatian Institute of Public Health (CIPH) data show a rising trend in cancer incidence and

lethality in Croatia as well. In terms of its lethality, colorectal cancer is second in Croatia, following lung cancer. Around 2,100 persons die from cancer annually, 60% of whom are men. The mortality trend has been relatively stable over the last ten years. However, colorectal cancer incidence is on the rise, increasing annually by 1%(4). Figure 1 shows colorectal cancer incidence and mortality in Croatia.

Measures proven efficient for decreasing both cancer incidence and lethality of some types of cancer include cancer prevention recommendations and cancer early detection programs (cancer

Corresponding author: Zdravko Ebling, Faculty of Medicine; University of Osijek, 31000 Osijek, Croatia, e-mail: zdravko.ebling@gmail.com.



Figure 1. Colorectal cancer incidence and mortality in Croatia. X-axis: years, y-axis: age-standardised rate per 100 000, blue curve: cancer incidence, red curve: cancer mortality. Source: <https://www.hzjz.hr/sluzba-epidemiologija-prevenicija-nezaraznih-bolesti/epidemiologija-raka-debelog-crijeva-u-hrvatskoj/>

screening) aimed at the general population without clinical symptoms belonging to a certain age group that can be associated with increased cancer risk or certain risk groups (for example, chronic cigarette smokers). Cancer prevention measures are predominantly based on avoiding or reducing environmental (occupational and diet) cancer risk agents and reducing unfavourable lifestyle related modifiable cancer risk factors such as tobacco and alcohol use, obesity, and physical inactivity. Cancer screening is based on the assumption that medical cancer treatments are more likely to be successful and curable if cancer is spotted at an asymptomatic clinical stage, i.e. at an early stage. Reducing cancer risk factors along with improving cancer screening is a complex and challenging task that requires initiatives and recommendations from medical organizations and societies, governmental support, acceptance of recommendations and active involvement in the organization of cancer prevention and screening actions, community efforts, as well as prompting changes in individual behaviors(5-10).

Therefore, this paper aims to provide an overview of activities relating to the design of the National Colorectal Cancer Early Detection Program (National CRC Program) and the results

achieved after seventeen years of its implementation (2007-2024).

NATIONAL COLORECTAL CANCER EARLY DETECTION PROGRAM IN CROATIA: DEVELOPMENT AND ADOPTION

The Government of the Republic of Croatia adopted the National Colorectal Cancer Early Detection Program on 4 October 2007(11). Certain individual and sporadic activities aimed at fighting cancer, that were carried out by medical societies of the Croatian Medical Association (CMA) and by other associations before the design and adoption of the National Colorectal Cancer Early Detection Program in Croatia were not especially efficient. The CIPH and numerous other societies and associations also highlighted the importance of cancer prevention and early detection. Proposals for improving cancer prevention and early detection were given, among others, by health care workers in the Osijek Baranja County(12-13).

After professor dr. sc. Mirko Šamija established in 2000 the Croatian Society for Oncology (CSO) of the Croatian Medical Association (CMA) and was its president for eight years, his main activity, alongside many other professional and sci-

entific activities, was drafting, together with his associates (professor dr. sc. Zdravko Ebling, and professor dr. sc. Marija Strnad), a proposal for a national cancer prevention and early detection program, which constitutes the basis of National Breast, Colorectal, Cervical and Prostate Cancer Early Detection Programs.

On 8 September 2003, the Ministry of Health adopted a decision on the establishment of working groups for the drafting of an operation program for preventing and detecting at an early stage breast, colorectal, cervical and prostate cancers, tasked with proposing on the basis on the most recent scientific breakthroughs a rational and acceptable program for cancer prevention and early detection, and appointed working group leaders and members(14). In 2005, the working groups charged with developing a national cancer early detection program prepared proposals for programs for particular cancer sites. Later, in 2012, the Ministry of Health established a Commission for Organization, Professional Monitoring, Evaluation and Quality Control of the Colorectal Cancer Early Detection Program(15).

The Proposal for the National Cancer Prevention and Early Detection Program in Croatia was presented at the 2nd Congress of the Croatian Society for Oncology in Opatija, 2004, and the 13th Congress of the Croatian Association of Family Medicine in Osijek, 2006(16,17).

The Proposal for the National Cancer Early Detection Program is aligned with EU Council recommendations (2003/878/EZ) of 2 December 2003 and the Declaration of the World Cancer Congress in Washington, 2006, and the Resolution on Malignant Tumors, adopted by the Croatian Parliament in 2009(18-20). In 2006, the Croatian Society for Oncology of the CMA, Ministry of Health and Social Welfare, Croatian Institute for Public Health, and Croatian Health Insurance Institute issued the Proposal for National Cancer Prevention and Early Detection Program in Croatia in Croatian with a print run of 5,000 copies(21). A draft national program entitled *Kako spriječiti i rano otkriti rak?* [How to prevent and detect cancer early?] and supplemented by the chapter *Role of Family Medicine in Implementing the National Cancer Prevention and Early Detection Program* was published by the Croatian Society for Oncology in 2007 with a print run of 50000 copies and in English with a print run of 1000 copies, respectively

(22, 23). In 2007, as already mentioned, the Croatian Government adopted decisions accepting, respectively, the National Colorectal Early Detection Program(11).

THE NATIONAL COLORECTAL CANCER EARLY DETECTION PROGRAM

The National Colorectal Cancer Early Detection Program (National CRC Program) organized by the Ministry of Health and Social Welfare was launched towards the end of 2007. Its implementation was to be centrally coordinated by the Croatian Institute for Public Health and its regional offices and participants in its implementation included the Commission of the Ministry of Health and Social Welfare, primary care physicians and community health nurses(11). The Program aims to decrease colorectal cancer mortality by a minimum of 15% during the first five years of the Program's implementation, cover at least 60% of persons invited for screening, detect cancer at an earlier stage and thus increase the chances for the treatment's success, better life quality and survival of patients, and achieve a coverage of the population at risk by early cancer detection programs of 75% by 2015.

The target group are men and women aged 50-74 years every two years, which is around 600000 persons annually. Screening invitations are sent to home address. The invitation letter is accompanied by three guaiac fecal occult blood test (gFOBT) cards and instructions on how to apply the test, a questionnaire on cancer risk factors and an educational leaflet on early CRC detection. Tests are performed at home and test cards are sent to laboratories with county institutes for public health. Family physicians have in the CEZIH program (Central Health Information System of the Republic of Croatia) an application, National Prevention Programs (NPP), that includes early colorectal cancer detection program. By looking in the NPP for colorectal cancer, the family physician may see the following actions: invitation to perform FOBT, test uptake, positive FOBT result, referral for colonoscopy, colonoscopy results and recommendation for further treatment. Since 2017, family physician teams may record in the NPP for colorectal cancer motivational interviews with persons who did not respond to the screening in-

vitations. under codes, respectively, OM184 and PT009, that are financially valuated(24).

17 YEARS OF EXPERIENCE IN IMPLEMENTING THE NATIONAL CRC PROGRAM

First reports on the implementation of the National CRC Program were published in the Croatian Journal of Public Health in 2009. The reports draw attention to the low screening uptake ranging between 20% and 25% of the persons invited. It highlights the need to include family medicine in the program, in particular by motivating the persons invited to undertake the screening(25,26). At the 5th Congress of the Croatian Society for Oncology in Cavtat, 2010, we outlined the experiences of implementing the National CRC Program during the first two-year period (2008-2009), during which time 304191 persons were invited to take part in the screening but only a relatively low percentage (19.8%) of them took up the invitation, with positive FOBT results being recorded in 9.1% of persons that took up the invitation with 181 colorectal cancers and 957 polyps detected by a colonoscopy afterwards(27). At this Congress a Memorandum of Understanding was signed between the Ministry of Science, Education and Sports and the Ministry of Health and Social Welfare of the Republic of Croatia, on the one hand, and the National Cancer Institute of the United States of America, on the other, that allows for exchange of experts and widening of cooperation in the field of protection of populations against cancer(28,29).

Two years later, i.e. in 2012, the World Journal of Gastroenterology published the paper *Results of the National Colorectal Cancer Screening Program in Croatia (2007-2011)* showcasing the results from Croatia. Thus a total of 1056694 invitation letters were sent out under the National CRC Program, with only 210,139 persons (19.9%) taking up the invitation. Positive FOBT results were found in 12477 (6.97%) persons that took up the invitation. Colonoscopy was performed in 8541 cases, 472 CRC cases (3.6% of FOBT positive) were detected and 3329 of polyps removed (39% of FOBT positive). The authors of the paper highlight insufficient involvement of family medicine teams in the Program(30).

By 2022 the fourth cycle screening uptake had been estimated at 36% (25-52% depending on

the county and year). Several counties recorded a rise in the uptake, which was probably due to educational activities directed at the general population and the work of community health nurses in the field. The proportion of persons that underwent screening is still below 25% and insufficient to bring about the achievement of the National Program's long-term goals(31).

Furthermore, research approved by the Croatian Ministry of Science, Education and Sport and conducted by Professor Zdravko Eblinga under the title *Early Cancer Detection Model Integrated in the Practice of Family Medicine* (2009) involved doing a cross-sectional study by random sampling, i.e., 1850 subjects aged 45 to 49, and 75 to 79 years were invited for screening after a face-to-face conversation, by phone, email or post. A relatively high response rate of 1083 tested subject (58.5%) took up screening, which is much higher than the uptake rate for the National CRC Early Detection Program that applies a centrally managed invitation procedure. The research has demonstrated the importance of including family medicine in the National CRC Program(32).

The uptake in this family medicine study is closer to the uptakes in national CRC programs in Finland and England (gFOBT) and Italy (iFOBT), namely, 72.0%, 59.3% and 47.1%, respectively, in which family medicine played a more prominent role(33-35). In Slovenia's 2009 early cancer detection program (Svit Program), the 6-year FIT uptake rate ranged between 56.9% and 59.9%. Family medicine is involved in the Program, with trained community nurses providing relevant information to the public at all health centers at a particular time every week, which has proven significant for the high screening uptake(36).

Over the past few years the CIPH's implementation of the National CRC Program improved. In addition to a media campaign aimed at including the public in CRC screening and acquainting family physicians and community health nurses with the Program and its implementation.

In 2014, the CIPH issued European Guidelines for Quality Assurance in Colorectal Cancer Screening and Diagnosis, authored by N. Segnan, J. Patnick, and L. von Karsa(37), and translated into Croatian, which are a good basis for harmonizing screening quality criteria across EU member states (37). The Guidelines highlight the need

for ensuring specific and continuing educational interventions targeted to family physicians and community health nurses about the early CRC detection program and ways in which they may contribute to increasing, by actively participating in the screening program.

In 2015, the CIPH published the manual “Community Health Nurses and Implementation of National Early Cancer Detection Programs” with a print run of 300 copies, highlighting the role of community health nurses in increasing uptake and educational outreach interventions on early cancer detection(38).

According to an international study of cancer survival trends (CONCORD-3), the five-year survival rates for patients diagnosed with colorectal and rectal cancer between 2010 and 2014 in Croatia were, respectively, 51.5% and 48.2%. In terms of these indicators, Croatia was among the lowest ranked European countries, with northern and western European countries ranking best with survival rates of around 65%(39).

In 2017, the motivational interview conducted by family physicians and community health nurses for inclusion in the NPP for CRC was included, as already mentioned, among diagnostic and therapeutic procedures (DTPs) under codes, respectively, OM184 and PT009, that are financially valuated(24). But merely acquainting family physicians and community health nurses with the NPP for CRC has not proved sufficient because only around 25% of the at-risk population takes up screening invitations.

In 2023, the president of the Commission for Coordination of the National Colorectal Cancer Early Detection Program, presented an analysis of 5-year treatment costs of CRC, which costs were significantly higher than the costs of the NPP for CRC in the same period(41). Notwithstanding the insufficient screening uptake of 25%, the National Colorectal Cancer Early Detection Program is without any doubt cost efficient.

CONCLUSIONS AND PROPOSALS

Information on CRC screening results should be permanently available for each screening cycle, by county and in Croatia’s community of health professionals and society in general, which is important for incentivizing program enhancements.

Family physicians already have the ability to see the data in their web application with all statuses of target group. Consequently family medicine teams may increase screening uptake by organizing community health nurses’ visits to families for motivational interviews, sending text, email or mail messages inviting persons for screening. With the same intention, CIPH each year organize the workshops with the aim to teach field nurses and family physicians about possibilities to motivate and educate target population.

We are of the opinion that by educating the population and as to more actively involve family medicine practitioners in the project, coupled with financial support outside the limits of DTPs, a higher screening uptake might be expected.

The manual on the role of community health nurses in national early cancer detection programs, that was published by the CIPH, has been well accepted and there is a perceived need for a new edition.

There is also a need for a manual on early cancer detection programs that would be adapted to the role of family physicians.

Experience gained over the 17 years of implementation of the National Colorectal Cancer Prevention and Early Detection Program points to the need for continuing educational interventions and assessments of contributions made by all those involved in the Program. It is expected that a more active involvement of family medicine in the National Program will increase screening uptake to over 45%, which is something that the Council of the EU also recommends.

One of the objective failing of the National CRC Program in Croatia is the persistent use of the guaiac-based test instead of the more reliable and available FIT (fecal immunochemical test) method. Compared to the guaiac test, FIT is more reliable (better sensitivity and specificity) and therefore widely accepted in EU countries. A year and half ago, the EU Council issued recommendations for a mandatory transition to FIT in screening(45).

CONFLICT OF INTEREST

The authors report no conflict of interest

ACKNOWLEDGMENT

The authors thank Mrs. Ana Burazin for editorial assistance.

REFERENCES

- Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin.* 2021 May;71(3):209-249. doi: 10.3322/caac.21660.
- De Angelis R, Demuru E, Baili P, Troussard X, Katalinic A, EUROCCARE-6 Working Group, et al. . Complete cancer prevalence in Europe in 2020 by disease duration and country (EUROCCARE-6): a population-based study. *Lancet Oncol.* 2024 Mar;25(3):293-307. doi: 10.1016/S1470-2045(23)00646-0.
- Global Burden of Disease 2019 Cancer Collaboration; Kocarnik JM, Compton K, Dean FE, Fu W, Gaw BL, Harvey JD et al. Cancer incidence, mortality, years of life lost, years lived with disability, and disability-adjusted life years for 29 cancer groups from 2010 to 2019: a systematic analysis for the global burden of disease study 2019. *JAMA Oncol.* 2022 Mar 1;8(3):420-444. doi: 10.1001/jamaoncol.2021.6987.
- Hrvatski zavod za javno zdravstvo – Croatian Institute of Public Health / Aktualnosti / Epidemiologija raka debelog crijeva u Hrvatskoj. Available from: <https://www.hzjz.hr/aktualnosti/epidemiologija-raka-debelog-crijeva-u-hrvatskoj-2/>
- Preventing cancer. World Health Organization. Available from: <https://www.who.int/activities/preventing-cancer>
- Soerjomataram I, Bray F. Planning for tomorrow: global cancer incidence and the role of prevention 2020-2070. *Nat Rev Clin Oncol.* 2021 Oct;18(10):663-672. doi: 10.1038/s41571-021-00514-z.
- Frick C, Rumgay H, Vignat J, Ginsburg O, Nolte E, Bray F, Soerjomataram I. Quantitative estimates of preventable and treatable deaths from 36 cancers worldwide: a population-based study. *Lancet Glob Health.* 2023 Nov;11(11):e1700-e1712. doi: 10.1016/S2214-109X(23)00406-0.
- Cabasag CJ, Vignat J, Ferlay J, Arndt V, Lemmens V, Praagman J, et al. The preventability of cancer in Europe: A quantitative assessment of avoidable cancer cases across 17 cancer sites and 38 countries in 2020. *Eur J Cancer.* 2022 Dec;177:15-24. doi: 10.1016/j.ejca.2022.09.030.
- Council Recommendation of 2 December 2003 on cancer screening (2003/878/EC). The Council of the European Union. Official journal of the European Union EN 16.12.2003. Available from: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32003H0878>.
- Council Recommendation on strengthening prevention through early detection: A new EU approach on cancer screening replacing Council Recommendation 2003/878/EC. The Council of the European Union. Available from: <https://data.consilium.europa.eu/doc/document/ST-14770-2022-INIT/en/pdf>
- Republika Hrvatska, Ministarstvo zdravstva i socijalne skrbi. Nacionalni program ranog otkrivanja raka debelog crijeva. Zagreb 2007. Available from: <https://zdravlje.gov.hr/UserDocsImages/dokumenti/Programi,%20projekti%20i%20strategije/Nacionalni%20program%20ranog%20otkrivanja%20raka%20debelog%20crijeva.pdf>
- Ebling B, Kovacic L, Ebling Z, Vlahusic A, Tokalic M et al. Present state and possibilities for improvement of cancer prevention and early detection in the Osijek-Baranya county. *Coll Antropol.* 2005 Jun;29(1):169-78.
- Trtica LM, Strnad M, Gmajnic R, Ebling B, Ebling Z, Markovic I, Samija M. Efforts in fighting against cancer in Croatia have to be focused on the primary health care. *Coll Antropol.* 2008 Sep;32(3):709-24.
- Rješenje o osnivanju radnih skupina za izradu operativnog programa prevencije i ranog otkrivanja raka, Zagreb, Ministarstvo zdravstva; Ur. Br. 534-03-02/1-03-04. 8. rujna 2003.
- Rješenje o osnivanju Povjerenstvo za organizaciju, stručno praćenje, evaluaciju i kontrolu kvalitete programa ranog otkrivanja raka debelog crijeva. Zagreb, Ministarstvo zdravstva; Ur. Br. 534-05-1-4/2-12 01. 27. travnja 2012.
- Šamija M, Strnad M, Ebling Z. Prijedlog nacionalnog programa prevencije i ranog otkrivanja raka. U: Šamija M, Solarić M (ur.): Zbornik radova 2. kongresa Hrvatskog onkološkog društva, Opatija. Zagreb: Hrvatsko onkološko društvo HLZ, Zagreb, 2004; 35-7.
- Ebling Z, Gmajnic R, Samardic Ilic V, Ebling B, Šeric V. Prikaz Prijedloga nacionalnog programa prevencije i ranog otkrivanja raka u Hrvatskoj. U: Ebling Z. ur. Zbornik radova XIII. Kongresa obiteljske medicine. Osijek: Hrvatska udružba obiteljske medicine; 2006: 17-26.
- The World Cancer Declaration 2006. International Union Against Cancer. Available at: <https://www.uicc.org/what-we-do/driving-global-impact/targeted-commitments/world-cancer-declaration>
- European Parliament resolution of 10 April 2008 on combating cancer in the enlarged European Union. Available at: https://www.europarl.europa.eu/doceo/document/TA-6-2008-0121_EN.html
- Rezolucija o zloćudnim tumorima. Zagreb: Hrvatski sabor, 14 sjednica, 2. listopada 2009. Available at: https://narodne-novine.nn.hr/clanci/sluzbeni/full/2009_10_121_2979.html
- Šamija M, Strnad M, Ebling Z, Kovačić L, Znaor A, ur. Prijedlog programa prevencije i ranog otkrivanja raka u Hrvatskoj. Zagreb: Hrvatsko onkološko društvo, Ministarstvo zdravstva i socijalne skrbi, Hrvatski zavod za javno zdravstvo, Hrvatski zavod za zdravstveno osiguranje; 2006, str.1-95. Available at: <https://www.bib.irb.hr:8443/277151>
- Šamija M, Strnad M, Ebling Z (ur). Kako spriječiti i rano otkriti rak. Zagreb: Medicinska naklada; 2007. ISBN: 978-953-176-378-3. Available at: <https://www.croris.hr/crosbi/publikacija/knjiga/5480>
- Šamija M, Strnad M and Ebling Z (eds). How to prevent and detect cancer early? Draft National Program..

- Croatian Oncological Society . Zagreb: Medicinska naklada.; 2007. ISBN: 978-953-176-377-6. Available at: <https://www.bib.irb.hr:8443/index.php/357286>
24. Dijagnostičko terapijski postupci u obiteljskoj medicini. Available at: http://www.cezih.hr/dokumenti/HZZO_Vodic_kroz_DTP_za_OM_04032013.pdf
 25. Strnad M, Šogorić S. Rano otkrivanje raka u Hrvatskoj. *Acta Med Croatica*. 2010; 64:461-68.
 26. Antoljak N. Nacionalni program rane dijagnostike raka debelog crijeva u Republici Hrvatskoj 2008-2011. *Hrvatski časopis za javno zdravstvo*. 2011; 7(28). Available from: <https://hrcak.srce.hr/file/429876>
 27. Šamija M, Strnad M, Ebling Z. Nacionalni program prevencije i ranog otkrivanja raka u Hrvatskoj. U: Šamija M. ur. *Zbornik radova 5. Hrvatski onkološki kongres*. Cavtat: Hrvatsko onkološko društvo, 2010, str. 17-20.
 28. Memorandum of Understanding between the Ministry of Science, Education and Sports and the Ministry of Health and Social Welfare of the Republic of Croatia and the National Cancer Institute of the National Institutes of Health of the United States of America. Listed as information at: <https://mvcp.gov.hr/print.aspx?id=22801&country=118&url=print>
 29. Ebling Z. 5. hrvatski onkološki kongres. *Medix* 2010; 16 (87/88): 44-46. Available at: <https://hrcak.srce.hr/file/90092>.
 30. Katičić M, Antoljak N, Kujundžić M, Stamenić V, Skoko Poljak D, Kramarić D, et al. Results of National Colorectal Cancer Screening Program in Croatia (2007-2011). *World J Gastroenterol*. 2012 Aug 28;18(32):4300-7. doi: 10.3748/wjg.v18.i32.4300.
 31. Hrvatski Zavod za Javno zdravstvo – Croatian Institute of Public Health / Nacionalni programi / Rano otkrivanje raka debelog crijeva. 22. kolovoza 2022. Available at: <https://www.hzjz.hr/en/nacionalni-programi/rano-otkrivanje-raka-debelog-crijeva/>
 32. Ebling B, Juretić A, Pribić A, Ebling Z. National colorectal cancer early detection program and colorectal cancer early detection model integrated in the practice of family medicine: our comparison. *Lib Oncol*. 2023; 51 (2-3): 97-101. doi: 10.20471/LO.2023.51.02-03.14. Available at: <https://hrcak.srce.hr/clanak/454019>
 33. Jäntti M, Heinävaara S, Nea Malila N, Tytti Sarkeala T. Sociodemographic features and patterns of non-participation in colorectal cancer screening in Finland. *Eur J Public Health* 2021; 11;31(4):890-894. doi: 10.1093/eurpub/ckab074.
 34. Tinmouth J, Lansdorpe-Vogelaar I, James E Allison J. Faecal immunochemical tests versus guaiac faecal occult blood tests: what clinicians and colorectal cancer screening programme organisers need to know. *Gut* 2015; 64(8):1327-37, DOI: 10.1136/gutjnl-2014-308074.
 35. Zorzi M, Da Re F, Mantellini P, Naldoni C, Sassoli De'Bianchi P, Senore C, et al. Italian colorectal cancer screening survey group. Screening for colorectal cancer in Italy: 2011-2012 survey. *Epidemiol Prev*. 2015 May-Jun;39(3 Suppl 1):93-107.
 36. Tepeš B, Mlakar DN, Stefanović M, Štabuc B, Grazio SF, Zakotnik JM. The impact of 6 years of the National Colorectal Cancer Screening Program on colorectal cancer incidence and 5-year survival. *Eur J Cancer Prev*. 2021 Jul 1;30(4):304-310. doi: 10.1097/CEJ.0000000000000628.
 37. Segnan N, Patnick J, von Karsa L (eds). *European guidelines for quality assurance in colorectal cancer screening and diagnosis*. Luxembourg: Publications Office of the European Union. ISBN 978-92-79-16435-4 (printed version), ISBN 978-92-79-16574-0 (CD-version). First edition 2010. Available at: <https://op.europa.eu/en/publication-detail/-/publication/e1ef52d8-8786-4ac4-9f91-4da2261ee535/language-en/format-PDF/source-search>
 38. Stevanović R, Nakić D (ur). *Uloga patronažnih sestara u provedbi nacionalnih programa ranog otkrivanja raka*. Zagreb: HZJZ; 2015. ISBN 978-953-7031-57-2. Available at: <https://www.hzjz.hr/wp-content/uploads/2018/11/Brosura-final-OK-NOVO-3.pdf>
 39. Allemani C, Matsuda T, Di Carlo V, Harewood R, Matz M et al; CONCORD Working Group. Global surveillance of trends in cancer survival 2000-14 (CONCORD-3): analysis of individual records for 37 513 025 patients diagnosed with one of 18 cancers from 322 population-based registries in 71 countries. *Lancet*. 2018 Mar 17;391(10125):1023-1075. doi: 10.1016/S0140-6736(17)33326-3. Epub 2018 Jan 31.
 40. Hrvatski zavod za javno zdravstvo – Croatian Institute of Public Health / Aktualnosti / Svjetsko istraživanje preživljenja od raka: Hrvatska ispod europskog prosjeka. 31. siječnja 2018. Available at: <https://www.hzjz.hr/aktualnosti/svjetsko-istrazivanje-prezivljenja-od-raka-hrvatska-ispod-europskog-prosjeka/>
 41. Hrvatski zavod za javno zdravstvo – Croatian Institute of Public Health / Aktualnosti / Održana tiskovna konferencija povodom obilježavanja "Mjeseca svjesnosti o raku debelog crijeva". 31. ožujka 2023. Available at: <https://www.hzjz.hr/priopcenja-mediji/odrzana-tiskovna-konferencija-povodom-obiljezavanja-mjeseca-svjesnosti-o-raku-debelog-crijeva/>
 42. European health Union: Commission welcomes adoption of a new EU cancer screening recommendations. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7548

Sažetak

NACIONALNI PROGRAM RANOG OTKRIVANJA RAKA DEBELOG CRIJEVA:
OD IDEJE, DOPRINOSA I 17 GODIŠNJE ISKUSTVO (2007. G. – 2024. G.)

Z. Ebling, B. Ebling, A. Juretić, R. Gmajnić, M. Strnad

Nacionalni program ranog otkrivanja raka debelog crijeva započeo je krajem 2007. godine. Hrvatsko onkološko društvo dalo je značajan doprinos izradi Nacionalnog programa ranog otkrivanja raka debelog crijeva. Cilj programa je smanjiti smrtnost od kolorektalnog raka (CRC) 15% u pet godina od početka programa, uz obuhvat stanovništva u dobi od 50-74. godine od 75% do 2015. godine. Program se temelji na testu fekalnog okultnog krvarenja (FOBT) s primjenom svake druge godine.. Koordinator programa su Hrvatski zavod za javno zdravstvo (HZJZ) i područni Zavodi za javno zdravstvo. Dio testiranih osoba nije viši od 25% te nije dostatan da za ostvarenje ciljeva Nacionalnog programa. Smatra se da se liječnici obiteljske medicine i patronažne sestre trebaju aktivnije uključiti u program motivacijom pozvanih na probir. Potrebno je aktivno uključenje timova obiteljske medicine u sve elemente Nacionalnog programa za CRC.

KLJUČNE RIJEČI: *Rak debelog crijeva, epidemiologija, rano otkrivanje, skrining, nacionalni program*