



RESULTS OF THE OSIJEK CROATIAN HEALTH CENTER SURVEY CONDUCTED IN 2022-2023 ON THE POSSIBLE REASONS FOR NON-PARTICIPATION IN THE NATIONAL COLON CANCER EARLY DETECTION PROGRAM

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Summary

The National Colorectal Cancer (CRC) screening program in Croatia recorded a low screening response rate. It was only in 2022 that the response to the fourth cycle invitation increased to 36%. The share of people who responded to the invitation is still no higher than 25%, which is still insufficient to start achieving the long-term goals of the tested National Program. The study *Improvement of the National Program of Early Colon Cancer Detection in the Osijek Baranja County through Increased Integration of the Program in the Practice of Family Medicine* included 104 non-responders to the CRC program. 25 persons (24%) immediately accepted the screening invitation. After a motivational interview with the family medicine doctor, 40 of them (56%) responded to the screening, while 33 of them (44%) did not respond to the invitation. The family medicine (FM) examinees who responded to the screening consider being invited to a screening by their team as a very acceptable way of being invited, and they give their consent to it in 100% of cases. Members of FM involved in the study suggest education of all FM teams and their active involvement in the program, as well as stimulation of involvement outside of diagnostic and therapeutic procedures (DTP). The importance of personal contact and the support of family medicine doctors is emphasized. They also propose an evaluation of the contributions of all involved in the CRC screening program.

KEY WORDS: colorectal cancer, epidemiology, early detection, screening, responses to national screening programs

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 the 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 other cancer types, colorectal cancer is third in terms of its incidence and second most common in terms of cancer-related deaths worldwide as well as in Croatia(1-4).

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Due to the increase in the number of new cases and the number of deaths due to cancer in Croatia, in 2003, the Croatian Oncology Society proposed a National Cancer Prevention and Early Detection Program, which forms the basis of the National Breast, Colorectal, Cervical, and Prostate Cancer Early Detection Programs(5).

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. The holder of the program is the Ministry of Health and Social Welfare, while collaborators in its implementation are the Croatian Institute for Public Health (CIPH), County Public Health Institutes (CPHI), primary health care teams or family medicine teams, outpatient nurses and Committee of the Ministry of Health and Social Welfare(6).

The target group covered by the program are men and women aged 50 to 74, with an expected coverage of at least 60%. The screening method is guaiac fecal occult bleeding test (gFOBT). An invitation letter for the screening under the National CRC Program together with the gFOBT test instructions and three test sample collection are sent by County Public Health Institutes (CPHI) to the home addresses of target participants. After testing, i.e. taking stool samples, all three samples and completed questionnaires must be returned to the CPHI laboratories in already prepared envelopes.

The application of *National Preventive Programs* (NPP) in the Central Health Information System of the Republic of Croatia (CEZIH) allows for the monitoring of the early colorectal cancer detection program, responses or non-responses to screening, gFOBT findings, colonoscopy findings, and treatment methods. By looking at the NPP for colorectal cancer, the family physician can monitor the following activities: invitation to perform gFOBT, test uptake, positive gFOBT result, referral for colonoscopy, colonoscopy results, and recommendation for further treatment. Since 2017, family physician teams can record in the NPP for colorectal cancer motivational interviews with persons who did not respond to screening invitations under codes OM184 and PT009, which are financially valued(7).

The first report on the implementation of the National CRC Program was published in the Croatian Journal of Public Health in 2009. It stated

that the screening response rate was low, ranging from about 20% to 25% of those invited. The CIPH emphasizes that the implementation of the program in Regional Institutes of Public Health (RPHI) will be of a better quality than family medicine implementation, which would be unable to systematically monitor and organize all the activities necessary for implementing and evaluating the program in addition to the other work performed at the clinic(8).

At the same time, according to the data of the Institute of Public Health of the Osijek Baranja County, by the end of 2009, 1,353 (25.6%) of those invited for screening responded to FOBT testing and 169 (12.5%) had positive FOBT results, 140 (80.5%) persons responded to the colonoscopy invitation, 15 cancers were confirmed, of which four cases with Dukes A findings, three with Dukes B2 findings, and one each with both Dukes C1 and C2 findings. The initial results point to the need for improving response by intensifying the media campaign and including family medicine in screening(9).

The National Colon Cancer Screening Program (from the end of 2007 to the beginning of November 2010) sent a total of 808,913 tests. Only 19.9% of them were returned, of which 7.7% were positive. At colonoscopy, there were 77.5% pathological findings: 388 cancers (5.99%), 2,492 polyps (38.46%), but also 1,641 findings of hemorrhoids and 998 of diverticula. The authors emphasize that cooperation with family doctors, specialist units, the media, regional and local self-government, partnership with non-governmental associations, monitoring and evaluation, and quality control require enormous effort and a lot of time, along with continuous education of all those participating in the program(10).

From 2007 to 2018, three call cycles were carried out, the estimated response rate was 22%, while the proportion of those tested was 19%. The estimated response rate to the fourth call cycle increased to 36% (25-52% depending on the county and year). In several counties, an increase in the number of respondents was recorded, which is probably the result of public educational campaigns and the work of visiting nurses in the field. The share of tested persons is still no higher than 25% and is still insufficient to start achieving the long-term goals of the National Program(11-13).

AIM OF WORK

The National Colorectal Cancer Early Detection Program has an important role in colorectal cancer (CRC) prevention and early detection of premalignant lesions and early-stage cancers when high cure rates are achievable. Therefore, to increase participation, it is important to analyze the causes of non-participation in the program. With that aim the Osijek Baranja County Health Center in Osijek did a study to determine the reasons for non-response to the National CRC Screening Program. Also, the analysis assessed the plausibility of screening when subjects are invited for screening by a family medicine team and evaluated the acceptability of a more active involvement of family medicine teams in the screening process. If we better understand the reasons why people do not participate in screening, it will be possible to plan activities that will contribute to more successful prevention. Below are the results of this analysis.

METHODS

The research was conducted in the Osijek Health Center during 2022 – 2023. In five outpatient clinics in the city and five outpatient clinics in the suburban Health Center in Osijek, family medicine (FM) teams and outpatient nurses were trained in small groups to learn about the meaning and method of implementing the CRC Project and about their role in lowering the number of people who do not respond to screening invitations. All family medicine teams taking part in the research received working materials on the meaning and method of implementing the CRC Program (20 pages of text, tables, and graphs). Each FM team reviewed the National Preventive Programs (NPP) application for CRC in the Central Health Information System of the Republic of Croatia (CEZIH) program and invited 10 non-respondents to participate in the screening through a motivational interview in the clinic or at home.

All those invited to the screening will be offered to fill out a questionnaire on the reasons for not responding to CRC screening and to give their opinion on the method of inviting them for screening by their FM team. The FM teams and visiting nurses will check by telephone whether the invited persons have given their consent in writing to the

RPHI to be included in the screening. Medical teams will evaluate the acceptability of a more active involvement of family medicine in screening within the framework of the National CRC Program.

SPSS Statistics 17.0 and Statistica 8.0 software packages were used in data analysis.

RESULTS

A total of 104 subjects were included in the examination of the reasons for low screening response rates in the National Colon Cancer Early Detection Program in the scope of the Osijek Health Center. Of these, 49% were men and 51% were women. The median age of the entire group was 62.86 years, ranging from 51 to 73 years of age. There was no statistically significant difference between men and women concerning age and gender within the examined group (Table 1). It can be seen that the subjects were of a relatively older age group, over 50 years old, which is understandable considering the frequency of colon cancer and the target group of 50 to 74 years covered by the program.

Of the total number of participants, 53% of them live in the countryside, while 47% live in the city. Of the total number of respondents, 59, or 57%, had previously been invited by the National CRC Program and 45, or 43%, had not. The overall patient response was 24%. Fifty-eight patients

Table 1.

Basic characteristics of the subjects

Subject characteristics	n	%
Sex		
male	51	49
female	53	51
total	104	100
Place of residence		
rural area	55	53
city	49	47
Have you ever been invited to the NPP for the early detection of colon cancer:		
yes	59	57
no	45	43
Did you respond to the invitation?		
yes	25	24
no	58	56
did not receive the invitation	21	20

Table 2.

Reasons for not responding to the invitation of the County Public Health Institutes (CPHI) for CRC testing

Survey questions	n	%
Did you respond to the invitation?		
yes	25	24
no	58	56
did not receive the invitation	21	20
Reasons for non-response		
I am already treating colon cancer	4	6
I am regularly checked for other colon diseases	6	8
I was tested for bleeding in the stool within the previous year	9	13
I had a colonoscopy within the previous 2 years	8	11
I do not understand the instructions provided with the test	9	13
I understand the instructions, but it is too demanding to take a sample	12	17
fear of colonoscopy	7	10
no one verbally explained to me what testing means	16	22

Table 3.

Some characteristics of those who did not respond to the first call of the County Public Health Institutes (CPHI)

Only for those who did not respond to the first CPHI's invitation	n	%
He/she did not respond even after an intervention by the Project	31	44
Responded to an intervention by a family medicine doctor	15	21
Responded to an intervention by a nurse on the family medicine team	9	13
Responded to an intervention by a visiting nurse	8	11
Responded as a result of other promotional activities	8	11

(56%) did not respond, while 21 (20%) did not receive an invitation.

Reasons for not responding to the CPHI's invitation to test for the presence of blood in the stool are shown in Table 2. When the reasons why the subjects did not respond to the call are added up, it becomes clear that the dominant reason is ignorance, i.e. the absence of a verbal explanation of what the testing itself means (22% of patients), and the initial perception of the difficulty of the test itself. These results indicate the importance of

oral communication and explaining the testing process to people invited for screening (Table 2).

Characteristics of the non-responder group

Of those who did not respond to the first invitation by CPHI, 31 (44%) did not respond even after a second invitation was sent to them by their family medicine team. However, 40 (56%) responded after a motivational interview with one of the FM team. Of these, 15, or 21%, responded to an intervention by a doctor, 9 (13%) to an intervention by a team nurse, and 8 (11%) to an intervention by a visiting nurse, while 8, or 11%, responded as a result of other promotional activities (Table 3).

Of the respondents who did not receive an invitation for various reasons (21 participants), a high percentage responded to an invitation from a member of the family medicine team, a doctor, or a nurse. Respondents invited to the screening rate the method of invitation by the doctor as the most acceptable, but they also rate highly invitations by other members of the family medicine doctor's medical team, i.e. a nurse or visiting nurse.

The family medicine teams involved in the research consider it necessary to include family medicine teams in the National CRC Program, provided they undergo prior training and additional stimulation which is outside of present stimulation as a diagnostic and therapeutic procedure. This research reveals that there is an unequivocal benefit to be gained from involving family medicine teams as actively as possible in improving the response rates of respondents to testing for early colon cancer detection.

DISCUSSION

The National Program for Early Detection of Colon Cancer (National CRC Program) was launched at the end of 2007. The reports published by the CPHI on the results of CRC screening show a low response rate to screening at around 25 to 30%(9-13).

In their work, Bebek et al.(14) analyzed why 50 respondents treated for CRC at the Sestre milosrdnice University Hospital Center in Zagreb did not respond to screening. Most of the respondents, i.e. 84% of them, knew about the National

Program, 74% of them received an invitation to participate, and only half of them participated (54%) in the screening. Of those who did not respond to screening, most knew almost nothing or a little about colon cancer, while only 26% knew enough. The authors conclude that the lack of information about colon cancer among the general public and the importance of detecting cancer in the asymptomatic stage of the disease with a successful cure might be the reasons for the low response rate to screening. The authors state that there is insufficient research in Croatia on the reasons for non-response of the population to CRC screening(14).

In 2011, a survey on the reasons for non-response was conducted among people who did not respond to CRC screening in the National CRC Program at the Osijek Health Center to gain insight into the attitudes of non-respondents in 2011(15). 783 persons who were not invited to the screening in the National CRC Program were invited to an evaluation survey on a 1 to 5 rating scale to assess the reasons why they did not respond to screening (1. testing is not important to 5. testing is important). The average points for the answers were recorded, and the obtained results show: 1) I am afraid of the test results: 2.08; 2) The test is of no significance: 1.67; 3) I don't want to be tested: 2.87; 4) I do not understand the technique of the procedure: 3.98; 5) The testing technique is unhygienic: 4.31. A higher percentage of women cited hygiene reasons, while men cited a lack of understanding of the testing technique. The results point to the need for better educating the target population about the importance of screening and the methods of FOBT testing(15).

Our research conducted on 104 non-respondents to the screening in the territory within the remit of the Osijek Health Center shows that 25 people (24%) immediately accepted the invitation to the screening, while 58 people (56%) did not respond to the screening. After the motivational interview, 33, or 44%, did not respond to the screening, and 40, or 56%, did respond after a motivational interview with one of the family medicine team. However, the family medicine team of the Osijek Health Center has had positive experiences with previous CRC screening by fecal occult blood testing.

Previous research conducted in 1978 shows that, after organizing 3 educational meetings for

family medicine teams and the general population about the importance of early detection of CRC and more than 30 meetings in urban and rural areas, 11750 people aged 50 to 69 accepted the screening. 9,282 respondents (81.2%) returned the tests for further processing. 83 subjects (2%) had a positive test for fecal occult bleeding. This is one of the highest response rates to gFOBT testing in Croatia(16). Further, in a 2009 study that included training family medicine teams in the colon cancer early detection program and motivating people invited for screening, 54% of the 1,850 persons invited for screening returned FOBTs for further processing(17).

These studies indicate that training family medicine teams in informing the population about screening for early CRC detection has an irreplaceable role in increasing the response of the at-risk population to the National CRC Program.

In neighboring Slovenia, the National Colon Cancer Early Detection Program (SVIT program) has been implemented since 2009 using an immunochemical test (FIT test). It covers men and women aged 50 to 74, every 2 years. Until 2014, the response to CRC screening by immunochemical (FIT) test was 60.43%, 55.22% in men, and 65.53% in women. In 2019, 65.59% of those invited responded to the screening(18). Stated as the main obstacles are very low level of trust in the health system, high level of trust in general practitioners, who, however, don't have the time, low health literacy, little knowledge about colorectal cancer, fear of cancer, many tasks that patients have to do at home, relatively complicated tasks and procedures, low self-confidence, uncomfortable (painful) colonoscopy without sedation, test kits delivered by mail, time-consuming visits to the general practitioner in case of positive FOBT, demanding preparation for colonoscopy(18).

An important reason for the success of their program is the SVIT program's reliance on high-quality information technology (IT) support. The Svit Programme is the Slovenian national screening and early detection program for colorectal cancer. Accordingly, everyone responsible for communication interventions receives detailed information about each step in the process and is sorted by municipality, which allows for the application of very precise procedures for each individual in the screening procedure(19,20).

Research into other screening programs with the immunochemical FIT test also points to higher participation of respondents when only one-time testing is applied to the screening population(21-23).

The study *Overview of European research on the reasons for non-response of the target population in preventive programs for early detection of cancer* reveals that demographic and psychosocial characteristics of persons invited to screening play a significant role in the response or non-response to screening. These characteristics of each individual and family are well known to their selected doctors, who can, based on their overall knowledge, encourage non-respondents to undergo screened through motivational interviews(24).

Follow-up notification letters, written reminders, scheduled appointments instead of open screening appointments, and telephone contact with the family medicine team have been shown to increase the acceptance of individuals invited to undergo FOBT screening(25). European guidelines for the quality assurance of colon cancer screening and diagnostics state that all family medicine doctors and medical and outpatient nurses should be provided with appropriate education so that they can contribute to decision-making on the inclusion of the population in CRC screening(26-28). The importance of personal contact and interactive communication with people involved in screening is emphasized(29-33). Furthermore, the European Society of Medical Oncology (ESMO) has provided an informative publication on colon cancer intended for patients(34).

CONCLUSIONS

Research on the response to CRC screening by 104 subjects invited for screening by their family medicine team shows that 25 persons (24%) immediately accepted the invitation to screening, 58 persons (56%) did not respond to the screening invitation stating that no one explained to them what the test meant, that they did understand the instructions but that taking test samples was too demanding or that they did not understand the instructions for taking samples. After the motivational interview with one of the family medicine team employees, 44% of them still did not respond to the screening, while 56% responded to the screening invitation.

Respondents invited to the screening rate the method of invitation by the doctor as the most acceptable, but they also rate highly invitations coming from other members of the family medicine team. Family medicine teams involved in the research assessed the need for active involvement of family medicine in screening but with prior education about the meaning of screening in the National CRC Program and stimulation outside of diagnostic and therapeutic procedures (DTP). The importance of personal contact and interactive, interpretive communication and support of family medicine doctors is emphasized.

CONFLICT OF INTEREST

The authors report no conflict of interest.

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Sažetak

REZULTATI ISTRAŽIVANJA DOMA ZDRAVLJA OSIJEK HRVATSKA PROVEDENOG 2022-2023. GODINE
O MOGUĆIM RAZLOZIMA NESUDJELOVANJA U NACIONALNOM PROGRAMU
RANOG OTKRIVANJA RAKA DEBELOG CRIJEVA

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U Nacionalnom programu ranog otkrivanja raka debelog crijeva (CRC) u Hrvatskoj zabilježen je nizak odaziv na probir. Tek 2022. godine odaziv na poziv četvrtog ciklusa je povećan na 36%. Udio testiranih osoba i dalje nije viši od 25%, što još uvijek nije dostatno da postizanje dugoročnih ciljeva Nacionalnog programa. U istraživanje „Unapređenje nacionalnog programa ranog otkrivanja raka debelog crijeva na području Osječko Baranjske županije većom integracijom programa u praksu obiteljskih liječnika“ uključene su 104 osobe koje se nisu odazvale programu za CRC. 25 osoba (24%) odmah je prihvatilo poziv na probir. Poslije motivacijskog razgovora s jednim od članova tima obiteljske medicine (OM) još 40 osoba (56%) se odazvalo dok se 31 osoba (44%) ipak nije odazvala na probir. Pozivanje na probir od svog tima obiteljske medicine ispitanici koji su se odazvali na probir smatraju jako prihvatljivim načinom pozivanja i za to daju suglasnost u 100% slučajeva. Članovi obiteljske medicine uključeni u istraživanje predlažu edukaciju svih timova OM i njihovo aktivno uključanje u program te stimulaciju uključanja izvan dijagnostičko terapijskih postupaka (DTP). Naglašava se važnost osobnog kontakta i podrška liječnika obiteljske medicine u probiru CRC-a. Predlažu i evaluaciju doprinosa svih uključenih u program.

KLJUČNE RIJEČI: rak debelog crijeva, epidemiologija, rano otkrivanje, nacionalni programi, odaziv na probir