

ORIGINAL ARTICLE

Involvement of general practitioners in colorectal cancer voluntary screening campaign: a mixed-methods study

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Summary

Purpose: To investigate the attitudes and willingness of the general practitioners (GPs) as well as their actual participation in the voluntary colorectal cancer (CRC) screening campaign without additional financial incentives for them, combining quantitative and qualitative approaches.

Methods: A multiple-case practice based study was designed using a mixed method, triangulation techniques and a sequential explanatory design strategy. The study included all 41 GPs practices in the Municipality of Asenovgrad. A questionnaire, face-to-face semi-structured interviews, non-participant direct structured observations and documentation review were used to collect data. Variation analysis, alternative analysis for percentage calculation and Mann-Whitney U test to compare two independent groups and Fisher's Exact Test were used. Statistical significance of the null hypothesis was assumed at $p < 0.05$.

Results: Older GPs ($p = 0.015$) and those working with a

practice nurse ($p = 0.000$) were more inclined to participate in the CRC screening campaign. GPs more knowledgeable of the importance of CRC screening with iFOBT (immunochemical faecal occult blood test), ($p = 0.002$) and those trusting its quality ($p = 0.007$) were more willing and ready to take part in the screening campaign. Among barriers that GPs encountered in the present screening campaign were lack of knowledge and experience about iFOBT, lack of materials and insufficient incentives.

Conclusion: Some limitations influence the voluntary participation of GPs in CRC screening campaign that have to be considered before decisions can be made on the implementation of population-based CRC screening programme in Bulgaria in accordance with European guidelines on best practice.

Key words: colorectal cancer, general practitioner, iFOBT, mixed-methods study, screening

Introduction

Colorectal cancer (CRC) is a widespread malignant neoplasm and the third most common cause of cancer-related death worldwide [1,2]. In Bulgaria, CRC is the third most frequent cancer in both sexes [3]. In the EU, undeniable evidence has been accumulated that screening for CRC has a significant beneficial effect on the disease-specific mortality (DSM), reducing it by 10% [4-6]. Various screening programmes have been implemented in many countries worldwide [7]. In Canada, England, Finland, Sweden, Italy and the Czech Republic, these programmes have achieved a nationwide

coverage [6,8-13]. In other countries such as USA, Germany, Austria, Japan and Taiwan, screening is organized on an individual appointment basis - an approach that is referred to as opportunistic screening [14].

In accordance with the European Best Practice Guidelines and the EU Council Recommendations, dated November 2, 2003 (2003/878/EC), all EU member states should adopt organised screening programmes for CRC [15]. Fortunately, the Colorectal Cancer Screening Network (ICRCNS) and other databases show that a great deal of screening ac-

tivities is already underway, although they rarely reach the status of well-organised, population-based, nationwide screening programmes [8,16].

More recently, iFOBT has been developed and introduced. The test is based on immuno-chemical analysis of faecal samples for occult blood [17]. CRC screening programs, using iFOBT modalities are among the most widely accepted and cost-effective [7,18]. The most commonly used iFOBT method has a higher specificity and sensitivity compared to gFOBT. It is preferred by patients since a single faecal sample alone is necessary, the test is non-invasive and no dietary restrictions or discontinuation of certain medication prior to testing are needed. Moreover, the test is easy to use at home [7,13,19]. Other possible screening methods are sigmoidoscopy and colonoscopy but they are less preferred by the patients compared to iFOBT [7].

Based on the findings of several studies from different countries, the involvement of physicians, especially GPs, in CRC screening can be very effective in improving patients' compliance [15,20-22]. Unlike other countries, where FOBT is a part of organized screening programmes, currently no systematic population-based screening for CRC is performed in Bulgaria [4,17,23,24]. The Bulgarian healthcare system is organized on a three-step model basis, with GPs acting as gate keepers. The GPs are funded on a per capita basis and receive additional payments for prophylactic activities. Presently, CRC screening is not a part of the reimbursed services. Before 2009, an attempt was made to carry out a screening for CRC, using gFOBT (guaiac faecal occult blood test). It was organized as a non-population-based programme, involving the GPs. The screening was discontinued due to poor compliance by both the GPs and the health insured persons. Therefore, in order to improve the compliance and after harmonization of National Health Services with the European guidelines in other countries was introduced the Regulation for organized cervical cancer screening [25]. At present, CRC screening programme in Bulgaria is at its preparatory stage.

The present study was inspired by evidence from different countries across the world, that iFOBT is effective when performed in the home setting, therefore involvement of GPs in the CRC screening should be encouraged [4,7,15,26].

The purpose of this study was to investigate the attitudes and willingness of the GPs as well as their actual participation in the voluntary CRC screening campaign without additional financial incentives for them, combining quantitative and qualitative approaches.

Methods

Study design

Multiple-case study design was used to study GPs' interest and attitude towards CRC screening with iFOBT. An attempt was made to produce a detailed picture of GPs' willingness to participate in the screening campaign. Multi-site, mixed method and practice-based study was carried out, using triangulation techniques and a sequential explanatory design strategy. The study included all 41 GPs in the Municipality of Asenovgrad (with a population of 30557 people, aged 45 years or over). The duration of the study was one year and it took place in 2015.

Recruitment of GPs and intervention

Multi-Stage Random sampling was used. Out of all country' municipalities, a single one was selected. All GPs from this municipality were invited to participate in the study. The same participants were involved in the quantitative and qualitative phase of the study. The sequential approach included a quantitative method first, followed by a second one – qualitative, which utilizes a probability sampling technique. From this sample, participants were selected for the follow-up qualitative phase. Initially, all 41 GPs agreed to participate and fill out the survey questionnaire. This is the general population of GPs in the Municipality of Assenovgrad (they represented 0.9% of all GPs in the country in 2014). Male to female ratio in the sample was 1.5/1.0 – corresponding to that in the country as female doctors are prevalent in this professional group.

In the qualitative phase of the study, a purposeful intensity sampling was applied to identify and select information-rich cases. It allowed both identification of cases related to the topic of interest and most effective use of the limited resources. The GPs had to have knowledge and experience with the phenomenon of interest and should have met the goal of data saturation and relevance [27].

The screening campaign was not state-funded, for this reason our study was focused on a single region only. Municipal authorities financially supported the provision of the screening tests. Actually, the study investigated the behavior of GPs in the CRC screening process, in case they were provided with the tests free of charge. The campaign was made possible due to the joint effort of the Municipal Government and the Medical University in Plovdiv. Approval to conduct the study was adopted at the regular council meeting with Protocol No. 47/dated 28.05.2014. The co-operation and partnership agreement allowed distribution of iFOBTs free of charge to all GPs practices on the territory of Assenovgrad with the financial contribution of the Municipal Council. Development of study design, data collection processing and analysis were performed by the authors and the Medical University in Plovdiv.

The educational and training campaign aimed at early CRC detection and overall improvement of health promotion effectiveness on a population level was undertaken within the frame of the screening program. It

involved both the primary care physicians and the population. Expert discussion with a surgeon on the topic was broadcast on the local TV channel. Information brochures on CRC epidemiology and the importance of implementing screening for it as well as the free iFOB tests were provided to all GPs at their practices.

A questionnaire, face-to-face semi-structured interviews, non-participant direct structured observations and documentation review were used to collect data [28]. The topic and the questions included in the interview's guide were developed on base results of the systematic review and according to the intervention evidence-based strategies to increase uptake of cancer screening [29,30].

The stages of the study are detailed in the flow chart diagram (Figure 1).

Stage I

Quantitative analysis of the study questionnaire

The questionnaire was filled out by all 41 participating GPs. Initially, they were informed verbally about the study and their informed consent to participate was requested. An informed consent was obtained from each GP. The questionnaire comprised several close ended questions about:

- their knowledge and understanding of the importance of the iFOBT,
- their trust in the sensitivity and specificity of iFOBT,
- desire and willingness of GPs to participate in a future screen campaign if financial incentives are available.

Stage II

The iFOB tests, information-educational leaflets and monitoring cards for target patients were handed out to all 41 GPs at their practices. Of them, 9 refused to participate in the study and returned the tests. The remaining 32 (78.0%) agreed to further continue their participation in the voluntary CRC screening campaign.

Stage III

Qualitative analyses

Data collection and analysis of interviews, observations and document review

At stage III (qualitative analysis), face-to-face semi-structured open ended interviews were conducted with the 32 GPs – participants at their practices. At the beginning of each interview, interviewers obtained an agreement to take notes during the interview and guaranteed the confidentiality of the collected data. Recording devices were not used. Handwritten notes were taken simultaneously by two researchers: both (RTD) and (MFR) authors used the same topic guide. The interview schedule was structured and the recording sheets provided enough space for the interviewers to take notes. Moreover, the schedule allowed time for them to make notes immediately after each interview. The interview guide focused on the following topics: 1) problems and barriers encountered by the GPs in the

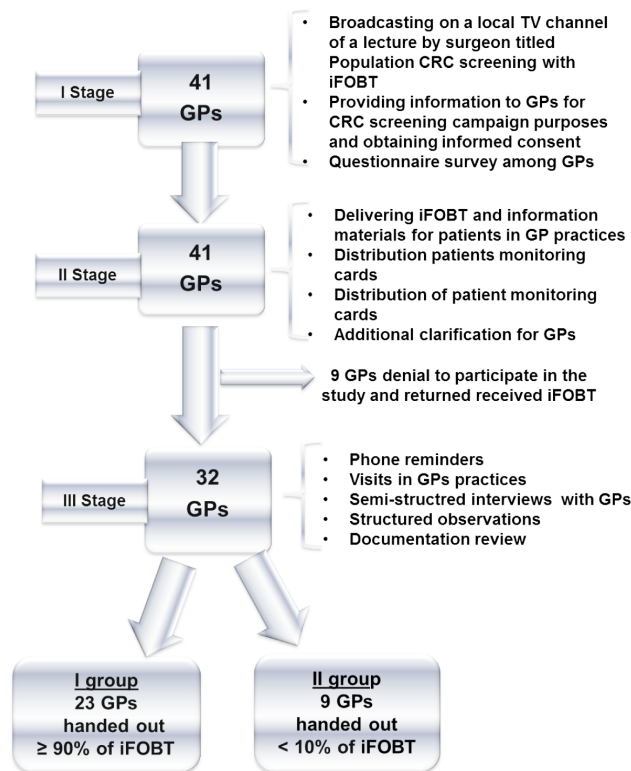


Figure 1. Study stages presented as a block diagram.

screening campaign; 2) GPs attitude and willingness to participate in future screening campaigns. Each of the two interviewers took independently their own field notes. The detailed comparison of the two separate sets of field notes contributed to the reliability of information and substantiated our claims for objectivity. The only two open-ended questions allowed us to follow the same sequence from one interview to the other.

The first phase of the open coding was done without a predefined framework. Subsequently, through an iterative process of constant comparison, an axial coding framework was developed. It analyzed the different levels of “obstacles” encountered in the screening. Thus, “selective” codes were identified and a comprehensive model of the screening process was developed. The interview method allowed to identify the GPs screening behaviours regarding the use of FOBT in the ongoing CRC screening campaign. It also enabled our researchers to analyze the impacts of the campaign and the individual GPs experiences on future screening programmes. The case analysis used thematic analysis with inductive approach [31].

During the same time frame and with equal weight, structured direct observations and document reviews at the work places of the GPs were conducted. The observations were used to evaluate the behavior of GPs during the CRC campaign, on the basis of observation forms, filled out by two researchers. The structured observations included a prepared observation plan and preset forms. It took into account both the number of tests and the number of leaflets remaining available at the GPs’ offices after the screening. Thus, observations made possible the analysis of available iFOBT and patient infor-

mation leaflets at each of the participating GP practices. The data of interest were available from the observation forms in YES-NO format (present-not present). The developed monitoring cards were analyzed, based on whether a “marker” was present to indicate if the target patients had received the test from their GP or not. Monitoring cards included the following information: patient initials, age, telephone and test result. Eventually, GPs’ participation and their individual performance was assessed using a dichotomous scale (active participation versus unsatisfactory performance) based on analysis of the filled out patients record flow sheets and whether more or less than 10% of the iFOBTs and other information materials reached the target patients’ groups.

Statistics

Data were processed using descriptive statistics and Mann-Whitney U test to compare two independent groups and Fisher’s Exact Test as appropriate. Statistical significance of the null hypothesis was assumed at $p < 0.05$.

Results

Quantitative approach

Characteristics of the GPs practices

The response rate in the questionnaire survey was 100% (41 GPs). The mean \pm SD respond-

ent’s age was 52.66 ± 6.64 years (range: 44-74) and 66.0% (n=27) of the respondents were women. Urban primary care practices prevailed - 35 (85.0%), GPs operations in rural areas were only 6 (15.0%). The average number of insured patients on the GPs’ lists was 1323 ± 540 , ranging from 388 to 3510 patients. Of all GPs from the Municipality, only 23 (56.10%) had an employed practice nurse.

Participation rate and related factors

A statistically significant difference was established in the age of participants willing to participate in the screening and those who refused to take part ($p=0.000$, $U=29.500$). Older GPs and those working with a practice nurse were more inclined to participate in the screening campaign (Table 1). Non-parametric analysis of the results did not establish a relation between GPs’ willingness to take part in the campaign and their sex ($p=0.130$); location of the practice ($p=0.738$) and the average number of patients on the lists ($p=0.937$; Table 1).

Awareness and knowledge about CRC screening with iFOBT

GPs, more knowledgeable of the importance of CRC screening with iFOBT and those trusting its quality were more willing and ready to take part in

Table 1. GPs’ age and presence of practice nurse and how these factors influence the willingness to participate in the CRC screening campaign (n=41)

Questions	Age of the GP, years n (%)			Mann-Whitney U and p value	Nurse in the practice n (%)		
	≤ 52	> 52			Yes	No	Mann-Whitney U and p value
Are you willing to participate on a voluntary basis in the CRC screening program?	Yes	10 (35.7)	18 (64.3)	$U=135.00$ $p=0.015$	21 (91.3)	7 (8.7)	$U=73.50$ $p=0.000$
	No	10 (76.9)	3 (23.1)		2 (38.9)	11 (61.1)	

Table 2. Awareness and confidence of GPs in CRC screening with iFOBT and their readiness to carry the programme out in future with financial incentives for them (n=41)

Questions	GP participation in the present CRC screening campaign n (%)			Mann-Whitney U and p value	Readiness to take part in future screening campaigns if additional financial incentives are offered n (%)		
	Participated	Denied			Yes, I have	No, I do not have	Mann-Whitney U and p value
Is iFOBT test important in CRC prevention	Yes	22 (95.7)	1 (4.3)	$U= 61.000$ $p=0.002$	22(95.7)	1 (4.3)	$U=59.000$ $p=0.016$
	No	10 (55.6)	8 (44.4)		12 (66.7)	6 (33.3)	
Do you have trust in the specificity and sensitivity of iFOBT?	Yes	20 (95.2)	1 (4.8)	$U= 70.000$ $p=0.007$	20 (95.2)	1 (4.8)	$U=66.000$ $p=0.034$
	No	12 (60.0)	8 (40.0)		14 (70.0)	6 (30.0)	

the screening campaign (Table 2). Analysis of the results indicated that GPs who have gained experience in the present campaign were more willing and ready to participate in future campaigns (Table 2).

Qualitative approaches

GPs' characteristics are presented in Table 3.

Interviews with GPs

The two main objectives of the interviews were to identify (from GPs' point of view) the obstacles and barriers encountered in the present screening campaign as well as their attitude towards participation in future screening programs.

Perceived barriers

Perceived barriers reflect the GPs' beliefs regarding the efficacy of any action undertaken to reduce the threat of the CRC. The GPs in our study reported an understanding of the aim of CRC screening at a population level and generally supported it. However, it should be noted that they did not have enough information and were not aware of the importance of screening in asymptomatic average-risk patients.

Perceived barriers to GPs' voluntary participation in CRC screening were related to physical, psychological, or financial issues. Personal and health-care system related barriers were also reported. The most important reasons for GPs to decline participation in the screening campaign are listed below:

1) *Cognitive barriers related to lack of knowledge and experience*

It should be noted that GPs do not perceive the iFOBT as a sensitive screening tool in the promo-

tion of bowel screening and they expressed concerns about its reliability.

"Personally, I support iFOBT screening but discussing screening with patients seems to be a little time consuming." – stated GP with ID 16.

GP ID 9 stated "changing the attitude and behavior of GPs' in their daily work are always a challenge. This is especially true when we talk to clinicians who have a busy and diverse clinical schedule".

"Ultimately, for some, I don't think it will be so much of an attitude shift, but rather getting GPs to think about opportunities for prevention and the population benefits of screening...", stated GP ID 5.

"I have no doubt in organized CRC screening but I do not trust the iFOBT... It is not sensitive and specific enough...the test has low effectiveness in CRC diagnosis" stated GP ID 3. He also added "...I'd rather believe that iFOBT has a limited accuracy in asymptomatic patients...than in symptomatic ones..."

"I'd rather send the asymptomatic patient... for colonoscopy than to get him or her to do the iFOBT..." GP ID 23 noted.

From the above-mentioned, it seems that GPs often think of 'screening' in a patient-focused rather than population-focused manner. Many of them state that colonoscopy is the test of choice, the gold standard in diagnosing bowel cancer. This perception reflects the personal concept of the screening process and its associated tools. They seem to be considered more as an individual method for risk assessment and diagnosis, than a public health strategy for prevention of bowel cancer.

2) *Lack of material and financial resources*

"The insufficient financial incentives prevent me from getting involved actively in prevention

Table 3. Physician demographic and practice setting characteristics (n=32 GPs)*

GP ID Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Male sex		√			√	√	√									
Age > 52 years	√		√				√	√	√		√	√	√	√		√
Urban practice	√		√	√	√	√	√		√	√	√	√	√	√	√	√
Patient list size >1323	√		√	√	√		√				√	√	√		√	√
Nurse in Practice	√		√	√	√		√		√		√	√	√			√
GP ID Number	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Male sex						√	√		√		√					√
Age > 52 years	√	√	√	√	√			√		√	√		√			√
Urban practice	√	√	√	√	√	√	√	√	√		√	√	√	√	√	√
Patient list size >1323						√	√		√			√	√			
Nurse in Practice		√		√	√	√	√	√	√		√		√	√		√

*the sum of the relative shares of each variable and its alternative is 100%

activities... such as CRC screening...I'd rather prefer to perform annual prophylactic checks up of patients - which are reimbursed by the Health Insurance Fund than to do screening without additional financial incentives..." GP ID 17 noted; "...I am not sufficiently motivated to engage myself in screening programs..." GP ID 8 and GP ID 14 explained.

3) *The lack of time and opportunities to discuss screening and the burden of administrative obligations*

The study protocol provided GPs with a test kit and educational brochures, however, most of the respondents found it difficult to arrange the CRC screening.

Practices with a nurse seemed to encounter less difficulties "...My nurse helps me to manage screening and motivate average-risk patients to perform the test...she helps me to arrange promotion activities" noted GP ID 12.

In support of the above mentioned "...without a nurse I am very busy at my work...I do not have enough time to give the due attention to my patients...GP ID 31 provides the following explanations, and adds: "...I have no time to arrange and discuss screening...I feel often exhausted after my work...there are so many administrative and bureaucratic obligations in daily work...which I have to finish by the end of the day..."

4) *Insufficient patient confidence and reluctance to screening with iFOBT*

"...I generally support screening and believe in it but, unfortunately people are not fully aware of its importance" - stated GP ID 29, "...Even if I had willingness to participate actively in the CRC screening...patients' adherence is poor..." noted GP ID 13.

GP practices with predominantly ethnic minority patients on their lists, report cultural and religious barriers: "...Most of my patients have a low level of education - stated GP ID 2-..." and added: "they have different ethnic background and low health literacy."

"...people tell me that they in general are experiencing embarrassment during taking the sample of their stool..." - stated GP ID 1. GP ID 15 added "...people feel uncertain and confused...some of them fear the result of the FOBT...and rather, some people fear even more having cancer..."

GP ID 2 stated "...A patient told me that in case of being diagnosed with cancer, he wished to know nothing about his illness".

Generally, the GPs would participate in future screening for CRC if it is organized as a national

campaign (GP ID 4,7,12,31), it is less time-consuming and less bureaucratic (GP ID 1,6,8,12,21, 31) and if it provides financial stimuli (GP ID 2,8,15,17,23,25).

Discussion

Main findings

The present study investigates the voluntary participation of GPs in the CRC screening campaign. It established insufficient knowledge and low trust level as well as lack of understanding by the GPs of the importance and benefits of the use of iFOBT in CRC screening in order to improve health indicators at national level.

It was found out that doctors' knowledge and understanding of the screening process influenced their screening behavior and their preferences for using different screening tools as the iFOBT. Therefore, in view of screening, the study has some important implications for practice and sheds light on how GPs could be engaged more actively in this process. Greater emphasis on the preventative aspect of FOBT screening would be beneficial, as well as formal engagement of GPs in the promotion of bowel screening.

Other findings

For years, a debate has been held on the role of GPs and their potential contribution to the effective implementation of screening programs and in persuading patients to participate in screening for CRC [20,21,32,33]. The existing cultural and organizational aspects and health policy strategies also play an important role and should be taken into consideration. [32]. Recently, a number of studies have provided evidence that GPs play an important role in the screening programmes [7,8]. They are engaged in the initial identification of patients at an average-risk for CRC, the delivery of the FOBTs and in instructing patients how to perform it. At a later stage, they explain to the patients the meaning and the consequences of the results [33].

The attitude of GPs towards CRC screening is particularly important. Results of international studies indicate that the effectiveness of CRC screening is largely dependent on the willingness and motivation of the GPs to participate in screening promotion campaigns [7,33]. A Dutch study of four hundred Amsterdam GPs found that GPs (32%) were less motivated and less in favour of national screening compared to gastroenterology specialists (92%) [7,34]. Unfortunately, some GPs refuse to participate in screening programs [7,35]. Studies in the US and France found that although

GPs were convinced of the importance of CRC screening, only a small number of them recommended it to their patients [36,37].

Similarly to other studies, our study showed that activities related to health care promotion as informing, motivating and encouraging patients to take responsibility in the process of disease prevention and improving their personal health are time-consuming for the GPs [7,33,38]. A study in France reveals that GPs expressed concerns regarding the time available to perform the test during the consultation and they, also, reported practical and administrative obstacles [34]. The lack of financial incentives for adherence to screening programme is another barrier reported by the American Cancer Society [23]. Similar to our results, in other studies, the lack of time and the inadequate and unnecessary administrative burden were identified as factors negatively impacting GPs participation in screening [32]. Therefore it is important to minimise potential financial obstacles, practical and administrative obstacles to improve the GP' compliance [36-38]. A current challenge for GPs and researchers is to explore to what extent the integration of the Health Belief Model (HBM) into the education and training of healthcare providers could be used in primary care setting to improve uptake of CRC screening and to what extent it could benefit the promotion of screening activities without financial incentives in general. The HBM was widely used to evaluate psychosocial motivations underpinning compliance with screening [38].

According to recently published papers the training of GPs is a significant determinant of their screening behavior [22,33,39]. Similarly to GPs in France and Holland, Bulgarian GPs also reported insufficient training in this area and some even doubted the relevance of screening [7,33].

Improvements in CRC screening uptake seem likely to become more visible after the adoption of the national population-based programme, and after a promotion campaign nationwide via the mass media. It will increase population and GPs awareness of the screening programme [40].

Strengths and limitations

It should be noted that in our study the iFOBT tests were provided free of charge to the GPs, however, additional financial incentives for them were absent and so far, there is no organized screening campaign at a national level.

The use of mixed methods approach in this study is an advantage as it is aimed at increasing the strengths and minimizing the weaknesses of the quantitative and qualitative research ap-

proaches. Methodological triangulation was used by combining qualitative and quantitative methods in the process of data collection, analysis and reporting. The sequential explanatory design is considered the most straightforward among mixed method designs. However, authors choosing this approach still face the challenges specific to this design, such as the amount of time, necessary to implement the two phases. No doubt, our study confirmed the trustworthiness of the method guaranteed by peer debriefing and checking of written notes among the two interviewers.

Some limitations apply to this study. We are aware of the small sample size in our questionnaire survey. This could result in some degree of bias and limited generalizability of the results. This is due to the limited funding of the campaign and the limited resources of the research team. On the other hand, the low motivation of GPs to participate in local screening campaigns is most likely attributable to the lack of organized screening program in Bulgaria.

We are aware that the sample size in the qualitative phase of the study is large, however, according to current researchers there are no specific rules when determining the appropriate sample size in qualitative research. The qualitative sample size depends on the purpose of the research, the time frame allotted, and the extent of credibility [27]. The semi-structured interviews allowed the respondents to freely express their views and were particularly useful for exploring their attitudes and motives towards the explored topic. In our study, we claim that even though the collected interview information was not recorded using a recording device, the written records were made strictly by the two interviewers to the possible extent. On the other hand, regardless of the use of observation guide and recording sheets, the written records are inevitably influenced by the researchers' personal beliefs of what is relevant and important.

Conclusion

Some limitations influence the voluntary participation of GPs in CRC screening campaign. A number of legal, medical, organisational and economic aspects have to be considered before decisions can be made on the implementation of population based CRC screening programme in Bulgaria in accordance with European guidelines on best practice. Structured programs and adequately trained medical professionals at all levels are needed in order to provide high quality screening and higher compliance and participation of GPs in organised screening programmes. Further

studies after implementation of CRC screening in Bulgaria will be necessary.

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Conflict of interests

The authors declare no conflict of interests.

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