Original Article

Knowledge and practice of physicians regarding colorectal cancer screening

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ABSTRACT: Introduction: Despite the high prevalence and high rates of mortality of colorectal cancer, it is likely to be a secondary prevention disease due to the presentation of characteristics that are ideal for a successful screening program, with a proven positive impact on its outcome. **Objective:** To describe the knowledge and practice of physicians concerning screening tests for the prevention of colorectal cancer. **Methods:** Cross-sectional study carried out between November 2011 and February 2012, through a questionnaire administered to 83 physicians who assist adult patients at the University Hospital of *Universidade Luterana do Brasil* and at basic health units of Canoas, Rio Grande do Sul, Brazil. **Results:** From the number of physicians participating in the survey, only 35 (42.0%) reported prescribing tests for colorectal cancer screening. Out of these, only 21 used the screening on patients aged 50 years old or more, as recommended by the guidelines. Only 65.0% of the physicians reported investigating family history of colorectal cancer, and surgical experts were the ones who least investigated this risk factor (p=0.005), when compared with clinical and gynecology specialties. **Conclusions:** The number of physicians who reported ordering tests for the prevention of colorectal cancer is still low, and their knowledge regarding the recommendations of the guidelines is very limited. The results indicate the immediate need for investment in professional formation and medical staff training concerning preventive measures for colorectal cancer.

Keywords: colorectal cancer; prevention; screening; physicians.

RESUMO: Introdução: O câncer colorretal, apesar de apresentar alta prevalência e elevadas taxas de mortalidade, é uma doença passível de prevenção secundária, devido ao fato de possuir características ideais para um programa de rastreamento bem-sucedido. **Objetivo:** Estudar o conhecimento e a prática dos médicos sobre o rastreamento e a prevenção secundária do câncer colorretal. **Métodos:** Estudo transversal, realizado entre novembro de 2011 e fevereiro de 2012, por meio de um questionário aplicado a 83 médicos que atendem diretamente pacientes adultos no Hospital Universitário da Universidade Luterana do Brasil e em unidades básicas de saúde de Canoas, no estado do Rio Grande do Sul. **Resultados:** Do total de médicos participantes da pesquisa, apenas 35 (42,0%) afirmaram solicitar exames de rastreamento do câncer colorretal e desses somente 21 iniciam o rastreamento a partir dos 50 anos, que é a idade recomendada pelas diretrizes. Apenas 65% dos médicos declararam investigar história familiar de câncer colorretal, sendo os especialistas cirúrgicos os que menos afirmaram investigar tal fator de risco (p=0,005), quando comparados com as especialidades clínica e ginecológica. **Conclusões:** O número de especialistas que afirmaram solicitar exames de prevenção do câncer colorretal foi baixo, e seu conhecimento quanto às recomendações das diretrizes se mostrou muito limitado. Os resultados apontam para uma necessidade imediata de capacitação e treinamento da classe médica sobre prevenção do câncer colorretal.

Palavras-chave: câncer colorretal; prevenção; rastreamento; médicos.

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INTRODUCTION

Colorectal cancer (CRC) involves malignant tumors that affect the colon and the rectum, thus constituting all over the world the third most common cause of cancer among males and the second among females[1]. The National Cancer Institute (Inca) estimates that, in 2010, the Brazilian population was affected by more than 28,000 new cases of such cancer and, in 2012, 30,140[2,3].

Mostly (70 to 90% of the cases), CRC comes from adenomatous polyps, according to the adenoma-carcinoma sequence, which slowly progresses in about ten yeras[4,5]. Even though this long period of evolution offers an opportunity to prevent CRC, it is clinically silent; that is, diagnosis and the consequent interruption of the evolution to a malignant lesion can only happen by the performance of screening tests, which are able to identify the adenomas, or even the carcinomas, in early stages[6].

Screening is a secondary form of prevention that uses tests of asymptomatic subjects for the presumptive identification of the disease, which is still unknown[7]. A study from 2010 pointed CRC screening as the cancer with greater chances of success, in terms of prevention and early detection[8]. This is due to the oncogenic peculiarities of this type of cancer and the availability of effective screening methods, which allow the identification and, consequently, the treatment both for precursor lesions (preventing CRC) and malignant tumors at early stages, with the confirmed reduction of mortality incidence and rates caused by the disease[9].

Literature shows that the incidence of CRC can be reduced in up to 90% when the detection and the removal of pre-malignant lesions occur[10]. Likewise, the survival of patients submitted to screening tests diagnosed with malignant lesions at early stages reaches 90% in five years[11,12].

In the United States, which has an effective system of prevention and vigilance, it was observed that between 2003 and 2007 there was a 13% decrease in CRC incidence, and a 12% decrease in mortality, which means the reduction of about 66,000 cases and 32,000 deaths in comparison with 2002[13].

Contrarily to what is observed in the USA, data from the Department of Data Processing of the Unified Health System (DATASUS) show that the mortality rate by CRC in the total of deaths caused by cancer in Brazil has increased. Rates ranged from 11.6%, from 1989 to 1993, to 14.5%, from 2003 and 2007[14].

The increasing rates of this type of cancer in Brazil and the higher mortality levels throughout the years indicate a flaw in screening and prevention. Among the explanations for this situation, there are medical unawareness and/or the non-application of recommended preventive measures.

A study conducted in São Paulo concerning the doctors' attitude towards prevention and screening of the most prevalent types of cancer showed that CRC was the type that doctors were less concerned about in terms of prevention. When performing it, the adopted screening methods were those that most diverged in relation to the recommendations in the guidelines[15].

A research aiming to determine the obstacles to CRC screening showed that the indication from a doctor is the factor that most influences the adhesion of the patient to screening tests for this type of cancer[16].

Considering that the medical class constitutes the main instrument of CRC prevention, and that the unawareness of these professionals concerning screening is one of the barriers to control the incidence and mortality caused by this cancer, this study aimed to analyze the medical knowledge and practice in relation to CRC screening and secondary prevention.

METHODS

It is a cross-sectional study performed between November 2011 and February 2012. The study population was comprised of 83 doctors who assisted adult patients in the University Hospital of *Universidade Luterana do Brasil* (ULBRA) and in basic health units of Canoas, Rio Grande do Sul, who agreed to participate in the study. Doctors were randomly selected.

Data collection was based on a self-employment questionnaire composed of open and closed questions concerning the characterization of the study population and the medical knowledge and practice related to CRC prevention.

The analyzed variables to characterize the study population were: year and university of graduation, specialty, place of work (University Hospital – ULBRA and basic health units of Canoas); place of assistance (outpatient client and admission) and income source of medi-

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cal care. The other variables included: ordering tests for CRC screening and the indication factor of the request, requested examinations, reason to choose the exam, investigation of family history of colorectal cancer, screening for other types of cancer and heart disease.

Time of formation was described by median and interquartile amplitude (percentiles 25–75), due to the asymmetric distribution of such variable. The other variables were described by absolute and relative frequencies and the association between them was assessed by the χ^2, Pearson or Fisher's exact test.

The analysis of the answers concerning the knowledge about CRC prevention was based on guidelines of polyp and CRC screening from the Agency for Health Care Policy and Research (Chart 1)[17].

The adopted significance level was 5% (p≤0.05), and the analyses were performed with the software Statistical Package for the Social Sciences (SPSS), 18.0.

Data collection and analysis were conducted only after the approval from the Human and Animal Research Ethics Committee of ULBRA, protocol 2011-248H.

The participants were enlightened as to the nature of the study, the voluntariness of the participation, and then they signed the informed consent form and received a copy of it. Identity preservation was assured by such term. The study followed the determinations of Resolution 196, from the National Health Council.

RESULTS

The questionnaire was answered by 83 doctors; 76% of them worked at the University Hospital, and 24% in basic health units of Canoas. As to the characterization of the sample, 100% of the doctors graduated in medical schools from Rio Grande do Sul and presented with median nine after graduation (P25–P75=3–20). Around 60% of them had clinical formation, with specialties dis-

Chart 1. *Recommendations by the Agency for Healthcare Policy and for colorectal cancer and polyp screening.*

Risk category	Screening method	Age to start screening
Medium risk (without associated risk factors)	Choose one of the following: Annual fecal occult blood test (FOBT); Sigmoidoscopy every 5 years; Annual FOBT and sigmoidoscopy every 5 years; Barium enema every 5–10 years†; Colonoscopy every 10 years.	50 years.
With family history	Choose one of the following Colonoscopy every 10 years; Barium enema every 5 years.	40 years of age or 10 years before the age the youngest member of the family was diagnosed, whatever comes first.
Hereditary nonpolyposis colorectal cancer (HNPCC)	Colonoscopy every 1–3 years; Genetic assistance; Consider genetic tests.	21 years.
Familial adenomatous polyposis (FAP)	Flexible sigmoidoscopy or colonoscopy every 1 to 3 years; Genetic assistance; Consider genetic tests.	Puberty
Ulcerative colitis	Colonoscopy with biopsy for dysplasia every 1–2 years.	7 to 8 years after the pancolitis diagnosis, 12 to 15 years after left-sided colitis diagnosis.

†: in 2008, guidelines from the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer and the American College of Radiology were published concerning colorectal cancer screening and prevention tests for people with medium risk, as follows:
Tests to detect adenomatous polyps and cancer: flexible sigmoidoscopy (FSIG) every five years; colonoscopy every tem years; barium enema every five years; computed tomographic colonography every five years.
Tests to detect especially cancer: stool guaiac test for fecal occult blood (gFOBT) – with high sensitivity for cancer, each year; fecal immunochemical testing (FIT) with high sensitivity for cancer, each year; stool DNA, with high sensitivity for cancer, uncertain interval[20].

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tributed according to Table 1, and 72.3% of them had professional connections with the medical school institution. Most of them worked concomitantly in outpatient clinics and admission and, at the same time, both for the Unified Health System (SUS) and for private health insurance companies (Table 1).

Out of the total number of doctors participating in the study, about 80% confirmed they knew about CRC screening, but only 35 of them (42.2%) declared ordering any prevention examination for this cancer during routine elective care.

Table 1. *Characterization of doctors who answered the questionnaire of the study as to year and university of graduation, specialty, work place (university hospital or basic health unit), place of medical care (outpatient clinic or admission) and income source of medical care, in Canoas, RS, 2012.*

Variables	n=83 (%)
Work place	
University hospital	63 (75.9)
Basic health unit	20 (24.1)
Graduation university	
Private	43 (51.8)
Public	40 (48.2)
Time of graduation conclusion (years) – median (P25–P75)	9 (3–20.0)
<5	25 (30.1)
5–10	18 (21.7)
10-15	11 (13.3)
>15	29 (34.9)
Specialty	
Clinical	49 (59.0)
Surgical	18 (21.7)
Obstetrics-Gynecology	16 (19.3)
Connection with medical school institution	
Yes	60 (72.3)
No	23 (27.7)
Place of medical care	
Only outpatient clinic	23 (27.7)
Only admission	2 (2.4)
Both	58 (69.9)
Income source of medical care	
Only the Unified Health System	25 (30.1)
Only private	2 (2.4)
Both	56 (67.5)

Among the 35 doctors who reported ordering tests for CRC screening, most of them stated this request was based on family history of this type of cancer. However, only 60% of them reported ordering it for the population aged 50 years or older, according to what is recommended by the guidelines (Chart 1)[17].

When these doctors were asked about which CRC prevention tests they order, most of them chose more than one option. The most indicated examinations were colonoscopy and the fecal occult blood test, 83 and 73%, respectively. Efficiency was the most indicated reason for choosing these examinations (Table 2). However, at the separate analysis of how many doctors order only colonoscopy as a test to prevent CRC, the frequency decreased from 83 to 40%.

Out of all the doctors who answered the questionnaire, only 65% stated investigating family history of CRC in patients without bowel complaints. More than 90% said they knew which the examination of choice for CRC prevention was and 82.7% mentioned colonoscopy as the examination of choice.

Most doctors, 84%, declared ordering tests or referring asymptomatic patients to screen for other types of cancer, and breast, uterine and prostate cancer are the ones that are mostly screened for: 88.7, 84.5 and 69%, respectively. Likewise, almost 90% of the doctors reported screening for heart disease in asymptomatic patients during routine care (Table 3).

It was observed that doctors who performed CRC screening were the ones who mostly responded having knowledge concerning screening (p=0.043), and also the ones who mostly stated investigating family history of this cancer (p=0.002) in relation to other doctors.

It was also found that 98.5% of the doctors with knowledge concerning CRC declared to know the examination of choice for screening, while amongst the ones who claimed not having this knowledge, only 62.5% reported knowing which was the examination of choice to prevent this cancer (p<0.001).

All variables were analyzed according to the specialties, and those which presented a statistically significant difference are shown in Table 4. Surgical experts, when compared to the others, are the ones who least analyze family history of CRC (p=0.005). Obstetrician-gynecologists pointed the efficiency as a reason to choose the screening test with less frequency (p=0.016). Besides, they mentioned more

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Table 2. Medical knowledge and practice at the university hospital and the basic health unit concerning colorectal cancer screening in Canoas, RS, 2012.

Variables	Total sample – n=83 (%)	University hospital – n=63 (%)	Basic health unit** – n=20 (%)	p-value
Is aware of CRC screening?				0.339
Yes	66 (79.5)	52 (82.5)	14 (70.0)	
No	17 (20.5)	11 (17.5)	6 (30.0)	
Orders any colorectal cancer screening test for patients without bowel complaints?				
Yes	35 (42.2)	27 (42.9)	8 (40.0)	1.000
No	48 (57.8)	36 (57.1)	12 (60.0)	
If so, in which situation?*				
According to age	31 (88.6)	24 (88.9)	7 (87.5)	1.000
Does not order according to age	4 (11.4)	3 (11.1)	1 (12.5)	1.000
Aged > 40 years old	5 (16.1)	3 (12.5)	2 (28.6)	0.562
Aged > 50 years old	21 (67.7)	18 (75.0)	3 (42.9)	0.172
Aged > 60 years old	5 (16.1)	3 (12.5)	2 (28.6)	0.562
According to family history of colorectal cancer	33 (94.3)	25 (92.6)	8 (100)	1.000
Routine for all	3 (8.6)	3 (11.1)	0 (0.0)	1.000
According to associated pathologies	14 (40.0)	9 (33.3)	5 (62.5)	0.221
Ordered examinations*				
Fecal occult blood test	13 (37.1)	10 (37.0)	3 (37.5)	1.000
Performs rectal touch	2 (5.7)	2 (7.4)	0 (0.0)	1.000
Rectosigmoidoscopy	1 (2.9)	1 (3.7)	0 (0.0)	1.000
Colonoscopy	29 (82.9)	23 (85.2)	6 (75.0)	0.602
Opaque enema	1 (2.9)	0 (0.0)	1 (12.5)	0.229
Refers to specialist	10 (28.6)	8 (29.6)	2 (25.0)	1.000
Reasons for choosing screening test for colorectal cancer*				
Efficiency	28 (80.0)	21 (77.8)	7 (87.5)	1.000
Availability	8 (22.9)	6 (22.2)	2 (25.0)	1.000
Cost	7 (20.0)	5 (18.5)	2 (25.0)	0.648
Others	3 (8.6)	3 (11.1)	0 (0.0)	1.000
Routine investigation of family history of colorectal cancer?				
Yes	54 (65.1)	40 (63.5)	14 (70.0)	0.793
No	29 (34.9)	23 (36.5)	6 (30.0)	
Knows which is the examination of choice for the prevention of colorectal cancer?***				
Yes	75 (91.5)	57 (91.9)	18 (90.0)	1.000
No	7 (8.5)	5 (8.1)	2 (10.0)	
If so, what is the examination?*				
Colonoscopy	62 (82.7)	48 (84.2)	14 (77.8)	0.499
Fecal occult blood test	7 (9.3)	3 (5.3)	4 (22.2)	0.053
Rectal touch	2 (2.7)	2 (3.5)	0 (0.0)	1.000
Rectosigmoidoscopy	4 (5.3)	4 (7.0)	0 (0.0)	0.567
Anamnesis	1 (1.3)	0 (0.0)	1 (5.6)	0.240
CEA	1 (1.3)	1 (1.8)	0 (0.0)	1.000
Tumor marker	1 (1.3)	1 (1.8)	0 (0.0)	1.000

*CRC: colorectal cancer; CEA: carcinoembryonic antigen; *multiple choice question; **basic health units; ***one subject who did not answer this question (1.2%); p-value: Fisher' test.*

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times the fecal occult blood test as the method of choice for the secondary prevention of CRC, to the detriment of colonoscopy.

An association between knowledge concerning CRC declared by the professional and time of graduation was found (p=0.028). Doctors who had been graduated for more than 15 years were the ones who mostly declared not knowing about CRC screening, as presented in Figure 1. They also investigated uterine cancer less frequently when compared to other doctors, who had been graduated for a fewer years (p=0.048).

Doctors graduated more recently (less than five years) were the ones who mostly stated ordering screening tests for prostate cancer (95.2%), when compared to those who have been graduated from five to ten years (55.6%), from 10 to 15 years (66.7%) and more than 15 years (56.5%), with p=0.019.

Concerning work location, it was observed that doctors from basic health units declared ordering more examinations to prevent uterine and prostate cancer than the doctors in the university hospital (p=0.030; p=0.011). However, no significant differences were found between these work places and CRC screening.

This study did not find statistically significant differences between the knowledge and practice of doctors concerning CRC screening and prevention, university of graduation, professional connections with the medical school institution, work place (outpatient clinic, admission) and the income source of medical care (SUS, private health insurance).

DISCUSSION

Despite presenting high incidence and mortality rates, colonic and rectal cancer can really be prevented by means of screening tests, which are able to detect and remove pre-malignant lesions[1,6]. However, this form of prevention is conditioned to a proper medical knowledge and application of the recommended screening examinations.

Out of the doctors who participated in this study, only 42% stated ordering CRC screening and prevention tests. This result corresponds approximately to the double of the data found in 2004 by Tucundava et al., who analyzed doctors in a medical school of São Paulo (20.30%)[15]. However, it is a much lower result than that found in the United States, which has an effective CRC vigilance and screening system. There, Klabunde et al. found that only 2% of primary care doctors do not order prevention examinations for this type of cancer[18].

Table 3. Attitude of the doctors who work in the university hospital and in basic health units as to screening for other types of cancer and heart disease in Canoas, RS, 2012.

Variables	Total sample – n=83 (%)	University hospital – n=63 (%)	Basic health unit** – n=20 (%)	p-value
Orders tests or refers asymptomatic patients to screen for other types of cancer?				
Yes	70 (84.3)	51 (81.0)	19 (95.0)	0.173
No	13 (15.7)	12 (19.0)	1 (5.0)	
What type of cancer?*				
Breast	63 (88.7)	44 (84.6)	19 (100)	0.099
Uterine	60 (84.5)	41 (78.8)	19 (100)	0.030
Stomach	14 (19.7)	11 (21.2)	3 (15.8)	0.745
Prostate	49 (69.0)	31 (59.6)	18 (94.7)	0.011
Lung	20 (28.2)	15 (28.8)	5 (26.3)	1.000
Skin	19 (26.8)	14 (26.9)	5 (26.3)	1.000
Orders prevention tests for heart diseases in asymptomatic patients?				
Yes	73 (88.0)	53 (84.1)	20 (100)	0.108
No	10 (12.0)	10 (15.9)	0 (0.0)	

*multiple choice question; **basic health units; p-value: Fisher's test.

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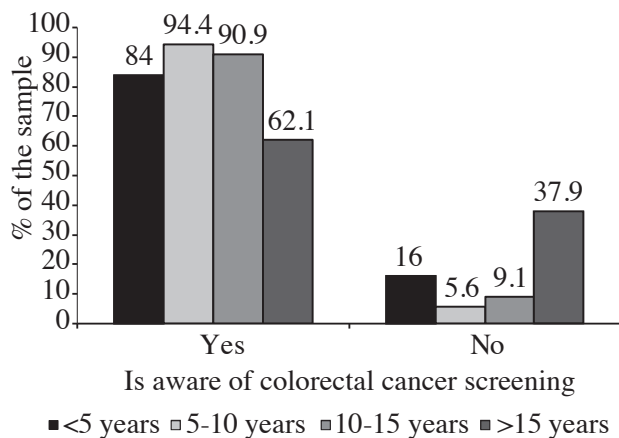*Elziane da Cruz Ribeiro e Souza et al.*

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The age to start CRC screening ranges, especially at the presence of family history for such disease (Chart 1)[17]. However, when this peculiarity is not present, it is common sense among the organizations involved in CRC prevention and control that everyone should start screening at the age of 50, period when its increased incidence is observed[9,19,20]. In this study, among the 35 doctors who stated ordering CRC prevention tests, 40% of them do not request it for patients aged 50 years old or more. This information points to the low level of knowledge of the doctors as to the CRC screening indications recommended by the guidelines, and it also confirms the data from a North-American study, which also found many doctors recommending this screening test for patients outside the suggested age group[1,18].

Table 4. *Medical knowledge and practice concerning colorectal cancer according to specialty in Canoas, RS, 2012.*

Variables	Clinical – n=31 (%)	Surgical – n=18 (%)	Obstetrics-Gynecology** – n=16 (%)	p-value
Reason for choosing the colorectal cancer screening test*				
Efficiency	18 (85.7)	7 (100)	3 (42.9)	0.016
Availability	5 (23.8)	0 (0.0)	3 (42.9)	0.159
Cost	6 (28.6)	0 (0.0)	1 (14.3)	0.240
Others	2 (9.5)	0 (0.0)	1 (14.3)	0.615
Routine investigation of family history of colorectal cancer?				
Yes	35 (71.4)	6 (33.3)	13 (81.3)	0.005
No	14 (28.6)	12 (66.7)	3 (18.8)	
Knows which is the examination of choice for the prevention of colorectal cancer?				
Yes	44 (89.8)	16 (88.9)	15 (100)	0.422
No	5 (10.2)	2 (11.1)	0 (0.0)	
Examinations of choice for colorectal cancer prevention*				
Colonoscopy	38 (86.4)	15 (93.8)	9 (60.0)	0.028
Fecal occult blood test	3 (6.8)	0 (0.0)	4 (26.7)	0.026
Rectal touch	0 (0.0)	2 (12.5)	0 (0.0)	0.023
Rectosigmoidoscopy	1 (2.3)	1 (6.3)	2 (13.3)	0.254
Anamnesis	1 (2.3)	0 (0.0)	0 (0.0)	0.700
CEA	1 (2.3)	0 (0.0)	0 (0.0)	0.700
Tumor marker	1 (2.3)	0 (0.0)	0 (0.0)	0.700
Orders tests or refers asymptomatic patients to screen for other types of cancer?				
Yes	44 (89.8)	12 (66.7)	14 (87.5)	0.065
No	5 (10.2)	6 (33.3)	2 (12.5)	
Which type of cancer?*				
Breast	42 (93.3)	7 (58.3)	14 (100)	0.001
Uterine	41 (91.1)	5 (41.7)	14 (100)	<0.001
Stomach	9 (20.0)	5 (41.7)	0 (0.0)	0.029
Prostate	40 (88.9)	7 (58.3)	-	<0.001
Lung	13 (28.9)	6 (50.0)	1 (7.1)	0.052
Skin	9 (20.0)	6 (50.0)	4 (28.6)	0.112
Orders prevention tests for heart diseases in asymptomatic patients?				
Yes	47 (95.9)	10 (55.6)	16 (100)	<0.001
No	2 (4.1)	8 (44.4)	0 (0.0)	

*CEA: carcinoembryonic antigen; *multiple choice question; **obstetricians-gynecologists; statistical analysis for prostate cancer was performed only amongst clinical and surgical specialties*

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Figure 1. *Association between colorectal cancer screening declared by the doctors and time of graduation conclusion, Canoas, RS, 2012.*

Generally, CRC screening tests can be divided into two categories. One of them is composed by stool tests, which are more adequate to detect cancer, once the pre-malignant lesions, especially small polyps, tend not to bleed, and the larger ones can present intermittent bleeding or simply not be detectable in a stool sample. The other category is represented by endoscopic examinations, especially colonoscopy, which reaches the double objective of detecting adenocarcinoma and adenomatous polyps, thus enabling the treatment of these lesions and, consequently, CRC prevention[20].

Since the primary objective of CRC screening is preention, tests that are able to detect both cancer in early stages and pre-malignant lesions should be indicated[20]. Among the doctors who stated ordering CRC prevention tests in this study, 82.9% indicated colonoscopy as an alternative for screening. However, with the analysis of which ones among them indicate this test exclusively as a prevention method, the frequency decreased to 40%. This information differs from the result found in the United States, where 95% of the doctors order colonoscopy for CRC prevention[21].

From all the doctors who answered the questionnaire, only 65% stated investigating family history of CRC in patients without bowel complaints, and an even lower frequency was found among surgeons and doctors who declared not performing screening for

this cancer. These results show the deficient investigation of this factor, once first degree relatives of people with CRC have twice or three times the chance to develop this type of cancer in comparison with the Control Group. Therefore, a positive family history determines age anticipation to start screening[7,17,19,22].

More than 90% of the doctors participating in this study said they knew which the examination of choice for CRC prevention was, mentioning colonoscopy 80% of the time. This result is similar to that found by Klabunde et al. with doctors in the United States, who also see colonoscopy as the most efficient screening method[18]. Even though there are no randomized prospective clinical trials analyzing colonoscopy as a method to reduce the incidence and/or mortality by CRC, it is based on indirect but substantial evidence, which recognizes colonoscopy as the most efficient prevention method. The advantages of colonoscopy include the complete colon and rectum examination, the possibility to diagnose pre-malignant lesions (main objective of CRC screening), the performance of biopsy, as well as the removal of adenomas, being the only test that is able to reduce the incidence of this cancer in 66 to 90% of the cases[20,23].

In most studies, the coverage rates concerning CRC screening are low, usually much lower than those related to other cancer prevention programs[7,15]. This data was confirmed in this study. While only 42% of all the participating doctors stated conducting CRC screening, which is similar to the double, 84% reported ordering tests or referring asymptomatic patients to screen for other types of cancer.

Breast and uterine cancers are the ones doctors mostly screen for, which confirms the results of another study from São Paulo, which found these two cancers as being the ones doctors are more concerned about preventing[15].

Proportionally to the screening for other cancers, more than the double of doctors participating in the research declared ordering prevention tests for heart diseases in asymptomatic patients. These results are in accordance with the analysis of mortality rates by chronic diseases in Brazil, which point to a 31% reduction in mortality by heart disease between 1996 and 2007, and an increased mortality rate by CRC, both for men and women[24].

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Nowadays, CRC affects women more than gynecological cancers. Epidemiological studies demonstrated the increased risk of colonic and rectal cancer from 1.5 to 3.0 times in women who have previously had primary malignant neoplasm of endometrium or ovary[25]. This information points to the need for even more attention from gynecologists to CRC prevention. The American College of Obstetricians and Gynecologists (ACOG) published, in the beginning of 2011, a report encouraging doctors in this specialty to order screening and prevention CRC tests for women aged more than 50 years old, or earlier, according to the risk. This report also recommends colonoscopy as the method of choice for prevention[26]. Despite that, out of the 16 doctors with this specialty who answered the questionnaire in this study, 56% stated not ordering screening tests for CRC. Besides, when compared to other specialties, they were the ones who most indicated the fecal occult blood test to the detriment of colonoscopy as the examination of choice to prevent such cancer.

In this study, the association between time of graduation and knowledge concerning CRC declared by the Professional stood out. Doctors graduated for more than 15 years were the ones who mostly declared not knowing about CRC screening (Figure 1). This can be related to the fact that guidelines and screening methods have been improved in the past decade, when these doctors had already finished their basic graduation.

The methodological limitations of this study should be mentioned. As demonstrated in previous studies, there is a gap between what the doctors report doing and what he or she actually does[27]. However, in Brazil there are no studies that assess knowledge and practice of the doctors specifically as to CRC screening and prevention. Besides, the found results confirm the findings in other studies, suggesting that the information presented is valid and interpretable.

CONCLUSION

A small number of doctors participating in this study adopt CRC screening and prevention methods. Besides, they demonstrated low level of knowledge concerning the recommendations in the guidelines for the prevention of this cancer, especially as to the age to start screening.

The results in this study point to the need to invest in professional formation and training of the medical class, emphasizing the importance and the efficacy of secondary prevention to control the incidence and mortality by this cancer.

REFERENCES

1. Jemal A, Bray F, Center M, Ferlay J, Ward E, Forman D. Global Cancer Statistics. CA Cancer J Clin [homepage on the Internet]. 2011 Dec [cited 2011 Nov 28]; 61:69-90. Available from: http://onlinelibrary.wiley.com/doi/10.3322/caac.20107/pdf

2. Instituto Nacional de Câncer [homepage on the Internet]. Estimativa 2010. Incidência do câncer colorretal no Brasil. [cited 2011 Oct 13]. Available from: http://www2.inca.gov.br/wps/wcm/connect/tiposdecancer/site/home/colorretal/definicao

3. Instituto Nacional de Câncer [homepage on the Internet]. Estimativa 2012- Incidência do câncer no Brasil. [cited 2011 Dec 02]. Available from: http://www.inca.gov.br/estimativa/2012/index.asp?ID=5

4. Bond J. Clinical evidence for the adenoma-carcinoma sequence, and the management of patients with colorectal adenomas. Semin Gastrointest Dis 2000;11(4):176-84.

5. Leslie A, Carey FA, Pratt NR, Steele RJ. The colorectal adenoma-carcinoma sequence. Br J Surg 2002;89(7):845-60.

6. Lux G, Stabenow-Lohbauer U. Cancer prevention with the endoscope. Search not only for polyps. MMW Fortschr Med 2002;144(51-52):29-33.

7. Secretaria de Estado da Saúde. Grupo Técnico de Avaliação e Informações de Saúde. A relevância do câncer colorretal. BEPA, Bol Epidemiol Paul [periódico na Internet]. 2009 Nov [cited 2011 Nov 12];6(68):01-14. Available from: http://periodicos.ses.sp.bvs.br/scielo.php?script=sci_arttext&pid=S1806-42722009000800006&lng=pt

8. Edwards BK, Ward E, Kohler BA, Eheman C, Zauber AG, Anderson RN, et al. Annual report to the nation on the status of cancer 1975–2006, featuring colorectal cancer trends and impact of interventions (risk factors, screening, and treatment) to reduce future rates. Cancer 2010;116(3):544-573.

9. Burt RW. Colorectal cancer screening. Curr Opin Gastroenterol 2010;26(5):466-70.

10. Wehrmann K, Frühmorgen P. Removing adenomas reduces colon carcinoma risk up to 90%. MMW Fortschr Med 2000;142(8):26-9.

11. O'Connell JB, Maggard MA, Ko CY. Colon cancer survival rates with the new American Joint Committee on Cancer sixth edition staging. J Natl Cancer Inst 2004;96(19):1420-5.

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12. Vasconcelos TA. Pólipos e Cancro do Cólon e Recto. Arq Med 2009;23(6):209-16.

13. Richardson LC, Tai E, Rim SH, Joseph D, Plescia M. Vital Signs: Colorectal Cancer Screening, Incidence, and Mortality. United States, 2002—2010. Centers for Disease Control and Prevention (CDC). MMWR Morb Mortal Wkly Rep 2011;60(26):884-9.

14. Departamento de Informático do SUS [homepage on the Internet]. Taxas de mortalidade por câncer no Brasil [cited 2011 Oct 15]. Available from: http://www.datasus.gov.br

15. Tucunduva LTCM, Sá VHLC, Koshimura ET, Prudente FVB, Santos ESTS, Samano EST, et al. Estudo da atitude e do conhecimento dos médicos não oncologistas em relação às medidas de prevenção e rastreamento do câncer. Rev Assoc Med Bras 2004;50(3):257-62.

16. Sarfaty M, Wender R. How to increase colorectal cancer screening rates in practice. CA Cancer J Clin 2007;57(6):354-66.

17. Read E, Thomas F, Caushaj P. Screening for Colorectal Neoplasms. In: American Cancer Society. Cancer Facts and Figures 2004. Atlanta, GA: American Cancer Society; 2004. p. 353-8.

18. Klabunde CN, Frame PS, Meadow A, Jones E, Nadel M, Vernon SW. A national survey of primary care physicians' colorectal cancer screening recommendations and practices. Am J Prev Med 2003;36(3):352-62.

19. Sociedade Brasileira de Endoscopia Digestiva [homepage on the Internet]. Rastreamento e Vigilância do Câncer Colo-retal. Prevenção secundária e detecção precoce. Projeto Diretrizes. SOBED. 2008. [cited 2011 Nov 15]. Available from: http://www.sobed.org.br/web/arquivos_antigos/pdf/diretrizes/Screening.pdf

20. Levin B, Lieberman DA, McFarland B, Andrews KS, Brooks D, Bond J, et al. Screening and Surveillance for the Early Detection of Colorectal Cancer and Adenomatous Polyps, 2008: A Joint Guideline From the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology. Gastroenterology 2008;134(5):1570-95.

21. Klabunde CN, Lanier D, Nadel MR, McLeod C, Yuan G, Vernon SW. Colorectal Cancer Screening by Primary Care Physicians Recommendations and Practices, 2006–2007. Am J Prev Med 2009;37(1):8-16.

22. World Gastroenterology Organization/International Digestive Cancer [homepage on the Internet]. Alliance Practice Guidelines: triagem do câncer colorretal. 2007. [cited 2011 Nov 15]. Available from: http://www.worldgastroenterology.org/assets/downloads/pt/pdf/guidelines/06_colorectal_cancer_screening_pt.pdf

23. Sonnenberg A, Delco F, Inadomi JM [hompage on the Internet]. Cost-Effectiveness of Colonoscopy in Screening for Colorectal Cancer. 2000; [cited 2011 Nov 15]; 133;8:573-84. Available from: http://www.annals.org/content/133/8/573.short?relatedurls=yes&legid=annintmed;133/8/573

24. Schmid MI, Duncan BD, Silva GA, Menezes AM, Monteiro CA, Barreto SM, et al. Doenças crônicas não transmissíveis no Brasil: carga e desafios atuais. Séries. Saúde no Brasil 4 [série na Internet]. 2011 [cited 2011 Nov 13];6736(11):60135-9. Available from: http://download.thelancet.com/flatcontentassets/pdfs/brazil/brazilpor4.pdf

25. Mahayri N, Moreira DCF. A importância dos registros de câncer de base populacional para identificar casos de câncer ginecológico relacionados com câncer colorretal em população de risco. Rev Bras Cancerologia [série na Internet] 2002 [cited 2011 Nov 25];48(3):349-56. Available from: http://www.inca.gov.br/rbc/n_48/v03/pdf/artigo3.pdf

26. American College of Obstetricians and Gynecologists. Committee Opinion No. 482: Colonoscopy and colorectal cancer screening strategies. Obstetrics & Gynecology [série na internet]. 2011 [cited 2011 Nov 30];117(3):766-71. Available from: http://www.mendeley.com/research/committee

27. Ganry O, Boche T. Prévention des cancers par les médecins généralistes de Picardie : résultats d'une enquête de type déclarative. Bulletin du Câncer [série na Internet]. 2004 [cited 2011 Nov 13];91(10):785-91. Available from: http://www.jle.com/fr/revues/medecine/bdc/e-docs/00/04/09/59/article.phtml

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