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KNOWLEDGE AND ATTITUDES OF GENERAL POPULATION BELONGING TO PHARMACIES OF THE PROVINCE OF PALERMO REGARDING THE COLORECTAL CARCINOMA SCREENING: RESULTS OF A CROSS-SECTIONAL STUDY

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ABSTRACT

Colorectal cancer (CC) is one of the leading cause of deaths every year. Oncological screening are health and social intervention that aims to diagnose a disease in an early stage. Although the high sensitivity and specificity of the colorectal cancer screening (CCS), the adherence in the Southern Italian Administrative Regions is low. A cross-sectional study on a sample of subjects belonging to five pharmacies located in the Province of Palermo, Italy, was conducted between June 2019 and February 2020 in order to evaluate knowledge and attitudes of general population regarding CC and CCS. A higher knowledge score among population interviewed was significantly associated with residency in Palermo City (adj-OR = 2.18; IC95% 1.02 - 4.71), with previous participations to an oncological screening program (adj-OR = 1.64; IC95% 1.09 – 6.41), and among subjects that preferred to withdraw the kit in pharmacy (adj-OR = 2.61; IC95% 1.39 – 4.90). Constant monitoring of adherence to screening programs, reasons for screening refusal and the active involvement of the territorial healthcare system (pharmacies and GPs) could contribute in future to an improvement of the acceptance and awareness of organized CCS program.

1.Background

Cancers are the second leading cause of death (29% of all deaths), after cardiovascular diseases (37%) in Italy with 371,000 diagnoses estimated in Italy (196,000 men and 175,000 women) in 2019 [1].

The five most diagnosed cancers in 2019 in Italy were breast (53,500 new cases), colorectal (49,000), lung (42,500), prostate (37,000) and bladder (29,700) [1, 2].

According to recent data, in 2016 in Italy, about 20,000 deaths from colorectal cancer (CC) were observed. The 5-year survival is about 70% and the southern Italian administrative Regions had lower survival rates [3, 4]. Screening is a health and social intervention that aims to diagnose a disease in an early stage, in order to obtain a better recovery or prognosis [5].

In Italy, screening for colorectal cancer was included in 2003 into the Essential Levels of Assistance (ELA) of the Ministry of Health, such as that for breast cancer and cervical cancer [6].

In Italy the colorectal cancer screening (CCS) is recommended for both sexes between 50 and 69 years old.

Every two years, following a paper-invitation of their Local Health Unit (LHU) sending by post, target population should carry out an immunochemical test for occult blood search in the faeces (FOB test or FOBT) as a first level diagnosis, and, in case of positivity, a colonoscopy as a second level test [7].

Since CC develops slowly (until ten years) from small benign formations called polyps, which can bleed as early as several years before other disorders appear, this test is predictive of a precancerous lesion in the colonic lumen [7, 8]. Occult blood is typically in small amount and can be detected only through the immunochemical FOBT [8, 9].

FOBT can be performed at home collecting a small sample of stool (taken from three different points) [8].

In Sicily, differently from other Italian Regions and similarly to what reported in other countries worldwide, the distribution and collection points for FOBT are pharmacies or screening centers of the Sicilian LHUs [7, 10].

Although the high sensitivity and specificity of the CCS and the free of charge offer for general population, the adherence in the Southern Italian Administrative Regions is lower than 50%, and lower than 30% in Sicily [11, 12].

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The present study have the main aim to analyze knowledge and attitudes of a sample of general population belonging to Pharmacies of the Palermo' Province regarding the CC and the CCS and the main factors associated with screening adherence.

2. Material and methods

A cross-sectional study on a sample of subjects belonging to five pharmacies located in the Municipality and in the Province of Palermo, Italy, was conducted between June 2019 and February 2020 in order to evaluate knowledge and attitudes of general population regarding colorectal carcinoma (CC) and colorectal cancer screening (CCS).

Sicily is a southern Italian region with about five million inhabitants, and is fourth for demographic density in Italy […].

Sicilian Region is constituted by nine Local Health Units (LHUs) that correspond to nine provinces (Agrigento, Caltanissetta, Catania, Enna, Messina, Palermo, Ragusa, Siracusa, Trapani).

In particular, the province of Palermo and the corresponding LHU, accounting for 1,252,588 inhabitants residing in 82 municipalities, is the most populous in the region [13].

The screening for colorectal carcinoma in the Sicilian Administrative Region is LHU-based. An active and free of charge offer of the molecular Fecal Occult Blood Test (FOBT) as a first-step test every two years in people aged 50-69 years old of both sexes and of the colonoscopy in case of positivity was standardized at Regional Level [7].

Specifically, in the LHU of Palermo, the withdraw and delivery of the specific kit for the molecular search of the Fecal Occult Blood Test in over 100 Pharmacies (115) and 21 LHU screening centers distributed in all the Province [7].

General practitioner have some fundamental role such as:

1. Information of target population:
2. Psychological support;
3. Recover of "not-respondents".

An anonymous questionnaire was administered by a Pharmacist to subjects older than 18 years old together with an informative form, that explained objectives of the study, and before the collection and signature of the informed consent form of the study.

The questionnaire was divided in into four main sections and was constituted by 22 items that investigated:

a. socio-demographic characteristics: sex, age, residence;
b. knowledge about the CC: age range at increased risk, most affected gender, main risk and protective factors, role of inheritance and of physical activity, symptoms of advanced stages;
c. knowledge about the CCS: existence of a specific screening test, first-level screening test, age range of CCS, main reason to participate to CCS, site of withdrawal and delivery of FOBT
d. Attitudes on CCS: preferred site of FOBT withdrawal and delivery and main reason, previous participation to cancer screening program, diagnosis of cancer among family members, recommendation to family members of cancer screening adherence

A knowledge score (KS) in order to classify the respondents in accordance to the correct or wrong answers related to the knowledge of CC and CCS was created by the authors. Specifically, in an 11-point scale, all the subjects that correctly answered to at least seven questions were considered with a high KS.

Data collected through written questionnaires were entered into a database created with EpiInfo 3.5.4 (Centers for Disease Control and Prevention, Atlanta, GA, USA).

All the data were analyzed using the statistical software package Stata/MP 12.1 (StataCorp LP, College Station, TX, USA).

Absolute and relative frequencies were calculated for the categorical (qualitative) variables. Mean age and standard deviation of respondents were also analyzed.

Correct responses to at least seven of the eleven "sentinel" questions investigating knowledge on CC and CCS was considered as a dependent variable (good knowledge) in the uni/multivariate analysis conducted. Variables found to have a statistical association with a p-value $\leqslant 0.20$ at the univariate analysis, to guarantee a more conservative approach, were included in the multivariate backward stepwise logistic regression model carried out.

The crude odds ratio (crude OR) and the adjusted OR (adj-OR) with 95% confidence intervals (CIs) were calculated in the logistic regression models. A p-value $\leqslant 0.05$ was considered significant throughout the study.

3. Results

In Table 1 sociodemographic data and knowledge/perceptions on CC and CCS program in the study sample are shown. The mean age of the study sample, consisting of 200 subjects, is 50.4 years (SD ± 16.3) and the age range was between 18 and 86 years old. An half (50%) of study sample belong to female sex. Among subjects interviewed, 81% (n=162) were resident in the Municipality of Palermo.

Considering knowledge on CC, 59% of the sample was aware of the age range most affected (50-69 years) by the CC and 40% were aware of the higher frequency of CC among male sex. Furthermore, 120 participants (60%) knew the risk factors of the CC (red meat consumption, high-dose alcohol intake and smoking habit) and 169 (84.5%) that a diet rich in fiber is the main preventive factor.

Among study participants, 81.5% (n=163) was aware of the role of inheritance in CC insurgence, 80.5% (n=161) was aware that physical activity can prevent CC and 68% (n=136) that bleeding and bowel occlusion are advanced symptoms of this CC.

The greatest part of the sample (89%) knew that there is a dedicated screening for the prevention of CC but only 21% of the respondents were aware of the first level screening test carried out in Italy and Sicily (FOBT test). About half of the sample (48%) also knew the correct age range for screening (50-69 years) and over two thirds (71%) of the sample were aware of the role of the screening (early diagnosis of the disease in an asymptomatic stage).

Mean Age (in years) ± SD		50.4 ± 16.3
Age Range, in years		18 - 86
		n (%)
Gender	Male	100 (50)
	Female	100 (50)
Residence	Palermo Province	38 (19)
	Municipality of Palermo	162 (81)
Age range at increased risk of CC diagnosis	Wrong answer	82 (41)
	Correct answer (50-69 years)	118 (59)
Most affected gender by CCR	Wrong answer	120 (60)
	Correct answer (male)	80 (40)
CC main risk factors	Wrong answer	80 (40)
	Correct answer (red meat consumption, alcohol intake, smoking habit)	120 (60)
CC main protective factors	Wrong answer	31 (15.5)
	Correct answer (fiber intake)	169 (84.5)
Role of inheritance in CC insurgence	Wrong answer	37 (18.5)
	Correct answer (yes)	163 (81.5)
Physical activity role in CC prevention	Wrong answer	39 (19.5)
	Correct answer (yes)	161 (80.5)
Most common symptoms of CC advanced stages	Wrong answer	64 (32)
	Correct answer (bleeding, bowel obstruction)	136 (68)
Existence of a specific screening against CC	Wrong answer	22 (11)
	Correct answer (yes)	178 (89)
First-level screening test for CC	Wrong answer	158 (79)
	Correct answer (FOBT test)	42 (21)
Age target for CC screening	Wrong answer	104 (52)
	Correct answer (50-69 years)	96 (48)
Reason for CC screening test	Wrong answer	58 (29)
	Correct answer (diagnosis of early-onset disease)	142 (71)

Table 1. Socio-demographic factors, knowledge and perception about colorectal CC and CCS in the study sample (n=200).

In Table 2, attitudes and perception of the study sample about CCS and its organization are reported.

The 87% of the subjects interviewed, were aware that Pharmacies and LHU's screening centers are the dedicated places to withdrawal and delivery the CCs kit for FOBT.

Pharmacies (51%) were considered as the best place for kit withdrawal and delivery by more than a half of the respondents, followed by general practitioners offices (28.5).

		n (%)
Withdrawal and delivery of CC screening kit in Sicily	Wrong answer	26 (13)
	Right Answer (pharmacy/LHU screening centers)	174 (87)
Who would you rather withdraw and deliver CC screening kit	LHU's screening centers	41 (20.5)
	Pharmacy	102 (51)
	General practitioner office	57 (28.5)
If pharmacy, specify the main reason	Flexible timetable	22 (18.8)
	Shorter waiting times	45 (38.5)
	Proximity to home	50 (42.7)
If GP office, specify the main reason	Possibilities to have information on CC and screening	31 (36)
	Higher confidence	20 (23.3)
	More privacy	35 (40.7)

Table 2. Significant correlation of dominant handgrip strength with study population characteristics

Specifically, among respondents that preferred Pharmacies, the higher proximity to home (42.7%), the shorter waiting times (38.5%) and the more flexible opening hours (18.8%) in comparison with general practitioner office, were reported as main reasons for the preference.

Among respondents that indicate the general practitioner office as preferred choice, the major privacy, the higher confidence in the GP and the higher possibilities to have information about CC and CCS were reported as main reasons for the choice.

In figure 1, the classification of the study population in accordance with the knowledge score is reported. Specifically, a knowledge score >7 regarding CC and CCS was observed in the 65.5% of the population interviewed.

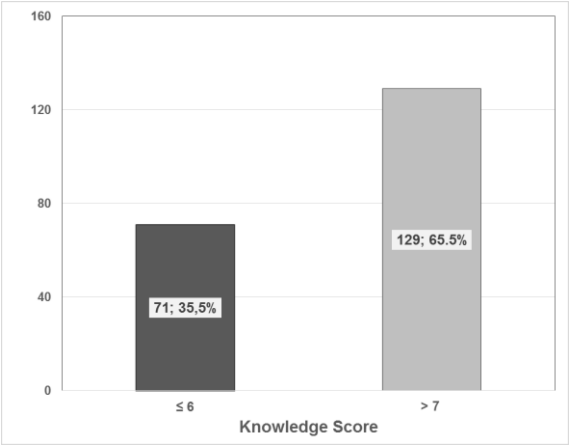

Figure 1. Distribution of population interviewed in accordance to the "knowledge score" regarding CC and CCS.

Finally, in table 3 results of univariate/multivariate analysis between higher knowledge score (≥ 7) and the main sociodemographic variables and attitudes regarding CC are reported.

A higher knowledge score was significantly associated with residency in Palermo City (adj-OR = 2.18; IC95% 1.02 - 4.71), with previous participation to an oncological screening program (adj-OR = 1.64; IC95% 1.09 – 6.41), and among subjects that preferred to withdraw the kit in pharmacy (adj-OR = 2.61; IC95% 1.39 – 4.90).

	Crude OR	CI 95%	p-value	AdjOR	CI 95%	p-value
Gender						
- Male	*ref*		0.66			
- Female	0.88	0.49 – 1.57				
Residency						
- Palermo province	*ref*		< 0.05	*ref*		< 0.05
- Palermo city	2.11	1.03 – 4.33		2.18	1.02 - 4.71	
Age classes						
- <30 years	*ref*		< 0.05			0.40
- 30 - 50 years	0.99	0.53 - 1.82		0.95	0.62 - 1.72	
- >50 years	1.56	1.04 - 2.32		1.20	0.77 - 1.86	
Have you ever done an oncological screening						
- No	*ref*		< 0.01	*ref*		< 0.05
- Yes	3.09	1.33 - 6.99		1.64	1.09 - 6.41	
Kit delivery method						
- others (GP, LHU)	*ref*		<0.001	*ref*		<0.001
- pharmacy	2.99	1.53 - 5.49		2.61	1.39 - 4.90	
Carcinoma diagnosis among family members						
- No	*ref*		0.34			
- Yes	1.37	0.60 - 2.66				
Suggest cancer screening adherence to family members						
- No	*ref*		0.47			
- Yes	0.67	0.23 - 1.98				

Table 3. Crude OR and adjOR of factors associated with a higher knowledge score (≥ 7) among respondents to the survey (n=200).

4. Discussion

Oncological screening are planned preventive measures in order to prevent cancer among women and men in defined age classes [14]. They are performed among the asymptomatic population in order to detect the disease in early stage, when there are high chances of recovery [15].

In the last 10 years, the effectiveness of screening program led public health institutions to consider it as an essential preventive strategy of secondary prevention in reducing disease burden, health-related costs [16].

The first step for the activation of a Regional screening program in Sicily were moved in 2005 with the agreement among Italian State and Administrative Regions following the National Prevention Plan 2005-2007 [17].

Only, in March 2010 Regional Health Department established a technical committee to organize a screening program on Sicilian territory and from 2011 the two-level plan (FOBT and colonoscopy in case of positivity) was standardized for people of both sexes aged between 50 and 69 years old. From 2011, LHU 6 of Palermo, became Provincial reference Centre for CCR screening [7].

Co-ordination of screening is achieved by sending the invitation by mail to test for FOBT to population from 50 to 69 years old [7].

CCR screening adhesion in Palermo Province between 2012 and 2018, on a targeted population of 334.662 people, was of 155.074 people tested (approximately 46%) and positivisy to FOBT test of 9.426 patients (6,1%) [1].

Literature shows that physicians can, through a tailored communication, positively influence health-related attitudes and behaviors of their patients with respect to treatment adherence [18-20].

These findings suggest that this positive influence can be extended to promote appropriate use of FOBT to screen colorectal cancer. Findings also suggest that it is not simply whether physicians communicate with patients about cancer screening that is important in promoting screening, but also *how* physicians communicate with patients [21].

Specifically, communication is most likely to impact on oncological screening adherence if it involves: (1) unequivocal endorsement or 'enthusiastic' physician disposition towards screening and (2) communication that informs patients about issues that reduce misinformation on important topics such as the relationship between increasing age and increasing risk of cancer. These elements may serve as particularly effective strategies for promoting screening use among patients of community-based primary care physicians and they should be taught and tested for their effectiveness with primary care physicians and their older patients [22].

In order improve CCS adherence rates, pharmacists promoted screening also in an "opportunistic" way, with a dedicated counselling for target people that go to pharmacies for other reason, even with informative material [7].

The pharmacist have a key role in explaining to patient the right mode of execution of the test, the importance of CCS and all the procedures to follow in case of positivity [7].

In Italy, the Community Pharmacists represents, together with GPs and Family Pediatricians, one the institution of reference for general population, regarding preventive and health issues [23].

Similarly to other organized screening (breast and cervical cancer) HCWs operating in the territorial medicine such as GPs, have a fundamental role especially in the enrolment phase [24]. Moreover, GPs should have a key role in the counselling of non-respondents, hard to reach people due to the postal invitation systems or to a low level of health literacy [25, 26].

Even if the study conducted had some limitation, due the possible selection bias and to the small number of participants, we can assume that the sample was representative of the entire population. Data collected, indeed, in terms of adherence to colorectal screening program, are in line with the literature and screening programs in Italy, particularly in the Central-Southern regions.

5. Conclusions

It has been demonstrated that an early detection of colorectal cancers can greatly increases the chances for successful treatment. Actual CCS methodologies are considered effective and with high level of specificity and sensibility.

The present study reports a high level of knowledge about CCS programme among the study sample (Knowledge score ≥ 7 = 65.5%), but lots of them, do not adhere to screening programmes with constancy and above all, with awareness.

The constant monitoring of adherence to screening programs, reasons for screening refusal and the active involvement of the territorial healthcare systems (pharmacies and GPs) could contribute in future to an improvement of the acceptance of organized CCS program and of the awareness of the CCS participation.

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