

Adherence to the three Italian screening in a sample of women (and men) in the Southern Italy

C. Genovese^{1,2}, R. Squeri², V. Alessi³, A. Conti⁴, S. D'Amato³, F. Mazzitelli³, G. Costa², A. Squeri⁵

¹PhD students in Translational Molecular Medicine and Surgery, XXXV cycle, University of Messina; ²Department of Biomedical and Dental Sciences and Morphofunctional Imaging, University of Messina, Messina; ³Postgraduate Medical School in Hygiene and Preventive Medicine, University of Messina, Messina; ⁴Health Management, Lentini Hospital, Sicily; ⁵Department of Human Pathology of the adult and developmental age "Gaetano Barresi", University of Messina, Italy

Abstract

Introduction. Although scientific evidence shows the numerous benefits of screening programs, in Italy. There is a great disparity between the regional coverage of the North and South despite the screening programs have been activated for several years in all regions even with territorial differences

Objective. The aim of our study was to evaluate the knowledge and adherence to different screenings in the population, the influence exercised by the local health authority the role of the general practitioner in advising and referring patients to screening tests and the main causes of refuse.

Material and methods. The study was carried out, from December 2019 to May 2020, through the administration of anonymous self-filled "ad hoc" questionnaires to women and men over 26 years old.

Results. in our sample 36% have never performed a breast check and 39% of the interviewees never had a mammogram; for cervical cancer 25% did not ever perform screening and 65% did not have an indication by GP. The worst result was found for colorectal cancer (only 27% of the sample performed the screening). The role of GP was fundamental for and similar to other studies, was fundamental in fact, similar to other studies the most frequent reported reasons for the non-execution of screening were the lack of physicians' advice, followed by lack of time, the most frequent reported reasons for the non-execution of screening were the lack of physicians' advice, a lack of time, fear of cancer and embarrassment at visiting a gynaecologist.

Discussion and conclusion. the study carried out found that despite the knowledge of the oncological disease and the possibilities of prevention is fairly rooted in the population, adherence to the screening is quite inadequate, especially as regards colorectal cancer. *Clin Ter* 2021; 172 (1):e75-79. doi: 10.7417/CT.2021.2287

Key words: screening, breast cancer, colon rectal cancer, cervical cancer

Introduction

The utility of screening, such as other form of prevention is worldwide known, with an important impact both on mortality and morbidity of many diseases, especially neoplastic ones in particular for breast, cervical and colon cancer.

Cancer colon is the third common one in Europe and the second cause of mortality and, also, in Italy, according to AIRTUM, the new diagnosis of colon cancer was estimated to be 53.000 in 2016 (1).

Cervical cancer is the fourth most common cancer in women over 50 years of age worldwide and ranks fourth in mortality (6), it ranks 2nd in frequency among women aged 15 to 44 (7). In Italy, carcinoma of the uterine cervix is ninth in frequency, mortality is decreasing, with a five-year survival passing from 63 to 71% in the last 20 years. (8)

Breast cancer is the first for diffusion and mortality in the female population, so much so that it accounts for 28% of all female malignancies. In Italy, breast cancer represent the most frequently diagnosed cancer among women both in the 0-49 age group (41%), in the 50-69 age group (35%), and in the most elderly ≥ 70 years (22%). 51,000 new cases are registered every year, this cancer ranks first for female mortality in all age groups, with a five-year survival rate of 87% (1).

Given due to this, nowadays three main screening were free available in Italy: Papanicolaou Test, Rx for breast cancer and faecal occult blood. Recently, given the role of some types of HPV viruses (so-called high risk) in the development of cervical cancer, the Regions have been invited to change the screening test for cervical cancer: the new screening test is based on the search for high-risk HPV infection. The sampling is similar to that of the Pap test but the exam must be performed no earlier than 30 years and repeated with intervals of not less than 5 years. From 25 to 30-35 years the reference exam remains the Pap test to be performed every three years. This choice is due to the fact that at a young age the probability of having an HPV infection is very high without this assuming a clinical importance.

Furthermore, for colon rectal cancer a small part of the screening programs active in Italy (in particular in the Piedmont region) uses another screening test instead of the search for occult blood, recto sigmoidoscopy performed only once at the age of 58-60 years, because about 70% of colorectal cancers develop in the final part of the intestine.

Although scientific evidence shows the numerous benefits of screening programs, in Italy there is a great disparity between the regional coverage of the North and South despite the fact that even with territorial differences, the screening programs have been activated for several years in all regions.

The aim of our study was to evaluate the knowledge and adherence to different screenings in the population, the influence exercised by the local health authority (i.e. through the dissemination of information material and invitation letters for screening), the role of the general practitioner (GP) in advising and referring patients to screening tests and the main causes of refuse.

Materials and methods

The study was carried out, from December 2019 to May 2020, through the administration of anonymous self-filled “ad hoc” questionnaires for each of the three active screenings in Italy, through 16 specific items; it was administered to women and men over 26 years old able to understand what is written in the questionnaire, after a specific informed consent. The interview were enrolled in the waiting room of the local health units (LHU) or of the hospital while they were waiting for other health checks to be carried out.

The questionnaire variables included the following items: (a) socio-anagraphical characteristics of the population (age, region, educational level, marital status); (b) screening adherence and time (first time and schedule), place where the test was performed (LHU, GP, private clinic or other private physicians) c) information on screening received by invitation letter and/or a GP’s advice (d) reasons of non adhesion.

All statistical variables detected in interviews have been subjected to synthesis by frequency distributions. Epi Info (Centers for Disease Control, Atlanta, GA, USA) was used for the statistical analyses.

Results

Breast cancer screening

206 questionnaires were administered to women aged between 26 and 70 years. The average age of the sample is 49.4 ± 13 years (Tab. 1) of which 48% ($n = 98/206$) resident in Sicily and 52% ($n = 108/206$) in Calabria. The level of education is quite variable, with generally higher education.

Table 1. Socio-personal characteristics of the sample for breast cancer screening

Age								
	26-35	36-45	46-55		56-65		>66	
	10%	8%	30%		35%		17%	
Region	Sicily				Calabria			
	48%				58%			
Educational level	Elementary school		Lower secondary school		High school		University	
	3%		26%		38%		33%	
Marital status	Single	Married	Widower		Divorced		Cohabitant	
	22%	58%	11%		6%		3%	

Most of the sample (95%) is aware of the existence of breast cancer and the existence of screening for the early diagnosis of it (86%). Nevertheless, 36% have never performed a breast check with an average age of $44.9 \text{ years} \pm 13 \text{ SD}$. Another discouraging result is that as many as 39% of the interviewees never had a mammogram and among those who joined the screening program only 10% performed a new check within two years, while 23% over two years.

The age at which the first mammogram was performed is variable, with 20.4% of the sample having performed the first mammogram in the age group between 50 and 69 years old (average age 53.7 ± 3.8) and of these, only 14.3% did so at the age of 50 years old as recommended by national guidelines. In addition, 23% of the sample underwent mammography before reaching the recommended age for screening (2% performed the check before 35 years, 19% between 36 and 45 years and 2% performed the check between 46 and 49 years old). No data are available for the remaining percentage of the sample, which did not answer the question.

The alarming result that emerges from the data analysis is that as many as 54% of the women never received indications from the family doctor to perform the mammogram and, similarly, only 37% of the sample received the letter of convocation sent by the local health unit (LHU). In this regard, 74% of women, however, said that having or not having received the letter did not influence their choice on whether or not to perform a mammogram.

Mammography was performed in 29% of cases at the LHU, generally obtaining a high degree of satisfaction in the service received for 81% of cases, thanks also to the distribution in 43% of women of information material on breast cancer screening. 26% of women, on the other hand, performed the examination at another facility, mostly (42%) in private clinics or by the trusted gynaecologist (25%). 43% of women who performed mammography recommended it to friends and relatives.

The reasons relating to the failure to perform the mammogram is the fear of a possible positive result (14%) or the lack of indication (11%), 8% of women believe they do not need it, 6% find it difficult to book the exam, 4% feel embarrassed while 3% have already undergone a breast operation.

Cervical cancer screening

192 questionnaires were administered to women aged between 26 and 70 (Table 2) with an average age of 47 years. The other socio-personal characteristics are summarized in table 2.

Table 2. Socio-personal characteristics of the sample for cervical cancer screening

Age								
	26-35	36-45	46-55		56-65		>66	
	38%	23%	24%		11%		4%	
Region of residence	Sicily			Calabria				
	45%			55%				
Educational level	Elementary school	Lower secondary school		High secondary school		University		
	3%	15%		35%		47%		
Marital status^	Single	Married	Widower	Divorced		Cohabitant		
	32%	44%	10%	4%		3%		

[^] 6% did not answer

Similarly to what reported for breast cancer, the women interviewed are generally aware of the existence of cervical cancer (93%) and the possibility of early diagnosis through the currently available screenings (89%).

Nonetheless, 65% of women never received an indication from the GP to perform the pap test and just half of the sample (51%) received the letter of convocation sent by the ASP and this influenced in 79% of cases the choice of carrying out the screening.

Fortunately, 75% of the women interviewed performed a pap test, of which 29% in the last year, 26% within the past two years, while 24% for over two years. Similarly to breast cancer, the chosen screening site did not coincide in most cases with the offer of the National Health System (Fig. 3): only 47% of the interviewees performed the investigation at the LHU. The degree of satisfaction with the service received was high for 66% of the interviewees and, moreover, 40% received informative brochure relating to cervical cancer and its prevention. 58% of the women who performed the pap test then recommended it to friends and relatives.

The reasons for the failure to carry out the screening check differently from that reported for breast cancer are mostly due to the lack of perception of the risk of acquiring the disease (23% of women believe they do not need it) while only 7% have fear of results. The lack of indication by the doctor (19%), the embarrassment (13%) and the difficult booking of the exam (6%) were the additional reasons provided by the interviewees while 15% of the sample did not provide an answer.

Similarly to what reported for breast cancer, the women interviewed are generally aware of the existence of cervical cancer (93%) and the possibility of early diagnosis through the currently available screenings (89%).

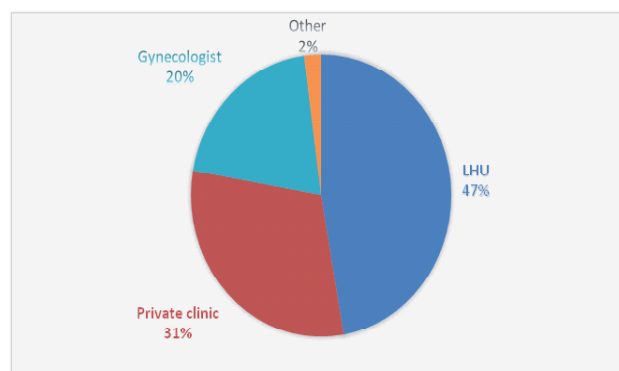


Fig. 3 Place where the test was performed by the sample.

Nonetheless, 65% of women never received an indication from the general practitioner to perform the pap test and just half of the sample (51%) received the letter of convocation sent by the ASP and this influenced in 79% of cases the choice of carrying out the screening.

Fortunately, 75% of the women interviewed performed a pap test, of which 29% in the last year, 26% within the past two years, while 24% for over two years. Similarly to breast cancer, the chosen screening site did not coincide in most cases with the offer of the NHS (Fig. 3): only 47% of the interviewees performed the investigation at the ASP. The degree of satisfaction with the service received was high for 66% of the interviewees and, moreover, 40% received information material relating to cervical cancer and its prevention. 58% of the women who performed the pap test then recommended it to friends and relatives.

Colorectal cancer screening

240 questionnaires were administered, of which 54% to women and 46% to men aged between 26 and 75 years. The average age of the sample is 48.9 years.

Table 3. Socio-personal characteristics of the sample for colorectal cancer screening

	26-35	36-45	46-55	56-65	>66
	22%	18%	25%	24%	12%
Region of residence	Sicily		Calabria		
	43%		57%		
Educational level	Elementary school	Lower secondary school	High secondary school	University	
	6%	16%	44%	33%	
Marital status^	Single	Married	Widower	Divorced	Cohabitant
	27%	64%	5%	3%	3%

Colon cancer is the one that has obtained the highest level of knowledge (99% of respondents) also as regards its possibility of prevention and early diagnosis (81%). In this

regard, only 27% of the interviewees performed the search for faecal occult blood tests (FOBT) (only 25% performed a new check within two years) and 33% a colonoscopy.

The age at which the first check was carried out is variable, but overall it was carried out in the time interval indicated for the screening (50-69 years): 40% performed it before the age of 50 years old, 26.7% before the age of 60 years old and 33.3% before the age of 70 years old.

As many as 66% of the interviewees never received indications from the GP to perform the search for FOBT and the letter of convocation of the LHM was received only by 6% of the interviewees and this influenced the choice of perform it in the 63% of the sample.

The screening was carried out in 25% at a private clinic and in 66% of cases at the LHM, achieving good customer satisfaction in 67% of the cases for the service received. 18% received informative material on colorectal cancer screening. 72% of those who took the exam then recommended it to friends and relatives.

The reasons for not adhering to the screening can be related in part to the lack of communication from the services in charge as 24% never received an indication to do so and in part to the lack of perception of the risk (24% of the interviewees believe they do not need it); 9% are afraid of the results, 5% feel embarrassed, 5% find it difficult to book the exam while 1% have already had an operation on the colon.

Discussion and conclusion

The study carried out found that despite the knowledge of the oncological disease and the possibilities of prevention is fairly rooted in the population, adherence to the screening campaign is quite inadequate, especially as regards colorectal cancer and the search for FOBT. This is in line with what reported by the national screening observatory (ONS) between 2011 and 2017 (20). According to the document hesitated by the ONS, more than 14 million invitations and more than 6 million and 300 thousand tests have been sent to Italy in 2017, obtaining coverage between 80 and 90% of the Italian population of target age for mammography and cervical screening and 75% for colorectal screening. The analysis of the published data shows an inequality in access to preventive services for those living in the South, resulting from a lesser extension of organized programs and less participation by citizens even when the programs are active. Nevertheless, in 2017, the coverage of invitations increased in the South and in Sicily by 8 percentage points for mammography screening, 2 points for colorectal screening and 5 points for cervical screening, but the distance from the Center North (where we are close to total coverage) remains evident. The lower development of the screening offer in the South encounters a further obstacle in the participation in invitations, which remains constantly lower than that recorded in the Centre and North: 20 percentage points less for colorectal and cervical screening and 10 for mammography screening.

In our study, adhesion to mammography screening is 61%, similar to data reported by the ONS where in the pre-screening bracket 64% of women reported having performed a preventive mammogram at least once in the life unlike what was found in our study where only 25% of the sample

joined to the screening. Other relevant data is that, although according to the ONS, about 50% of women received an invitation from their LHM in our sample, the percentage is much lower (only 37%).

Similarly as regards adhesion for cervical screening, the data collected by the ONS indicates that the overall coverage of the preventive test reaches high values in the North (87%) and in the Centre (84%), while it is lower in the South (68%). Higher values are observed in our sample although the extent of the invitations is limited (only 50% of the women received one).

Finally, with regard to colorectal screening, only 6% of the sample received an invitation letter from the LHM despite the report found a coverage of 50% in the South Italy; fortunately, the coverage data of the sample are comparable (indeed slightly higher) to those reported for the South of Italy.

Similarly to what reported in other studies pain or embarrassment and GP's advice are the factors that correlated more strongly (positively or negatively) with adherence to colorectal cancer screening (21-26).

At the same time, for cervical cancer we found same results of other study in Sicily where GPs' advice and perceived susceptibility increased the likelihood of the execution of a Pap test (27). Similar to other studies, the most frequent reported reasons for the non-execution of screening were the lack of physicians' advice, a lack of time, fear of cancer, and embarrassment at visiting a gynaecologist/clinicians. So, the role of GP could be important to address these barriers and especially to catch-up the adherence screening of the women (28).

Limits of our study are related to its observational nature with several bias such as selection bias (that in our study is reduced by a random selection from the target population and because all selected persons take part in the study), recall bias (limited thanks as the event to remember was quite recent i.e. 1-3 years before, and finally interviewer bias (the survey was preformed with a self-filling questionnaire and so we limited it).

Finally, the role of these screening is fundamental in order to avoid late diagnosis (29-30) unfortunately, today the pandemic we are facing further limits access to these services, so it is necessary to rethink a new strategy for organizing screening campaigns and accessing primary care.

References

1. AIOM, AIRTUM. I numeri del cancro in Italia 2017. Incidenza, mortalità e sopravvivenza per tumore in Italia . - http://www.registri-tumori.it/PDF/AIOM2017/2017_numeri_del_cancro.pdf
2. European Colorectal Cancer Screening Guidelines Working Group, von Karsa L, Patnick J, et al. European guidelines for quality assurance in colorectal cancer screening and diagnosis: Overview and introduction to the full Supplement publication. *Endoscopy*. 2013;45(1):51-59. doi:10.1055/s-0032-1325997
3. Armaroli P, et al. European Code against Cancer, 4th Edition: Cancer screening. *Cancer Epidemiology*, Volume 39, S139 - S152

4. Shapiro JA, Seeff LC, Nadel MR. Colorectal cancer screening tests and associated health behaviours. *Am J Prev Med* 2011; 21:132–137
5. <https://www.osservatorionazionalecreening.it/sites/default/files/allegati/ons%20rapporto%202017.pdf>
6. IACR Globocan 2012 Cervix uteri fact sheet. Last access.
7. Altobelli E, et al. *Int J Gynecol Cancer* 2015; 25:474-483
8. Ferlay J, Soerjomataram I, Dikshit R, et al. Cancer incidence and mortality worldwide: sources, methods and major patterns in GLOBOCAN 2012. *Int J Cancer*. 2015 Mar 1;136(5):E359-86. doi: 10.1002/ijc.29210. Epub 2014 Oct 9
9. I numeri del cancro in Italia. 2016 AIRTUM-AIOM. - 5. Linee Guida Neoplasie dell'Utero: Endometrio e Cervice - Linee Guida AIOM. 2016
10. Harry J, Long Nadia NI, Laack Bobbie S. Gostout, Prevention, Diagnosis, and Treatment of Cervical Cancer, Mayo Clinic Proceedings, 2007; 82:12:1566-1574, ISSN 0025-6196. [https://doi.org/10.1016/S0025-6196\(11\)61104-X](https://doi.org/10.1016/S0025-6196(11)61104-X)
11. Heitman ER, Harper D. Prophylactic HPV Vaccines and Prevention of Cervical Intraepithelial Neoplasia. *Curr Obstet Gynecol Rep* 2012; 1:95-105
12. <https://www.osservatorionazionalecreening.it/content/lo-screening-cervicale>
13. Grce M, Davies P. Human papillomavirus testing for primary cervical cancer screening. *Expert Rev Mol Diagn*. 2008 Sep; 8(5):599-605
14. PNP 2014- 2018
15. http://www.salute.gov.it/imgs/C_17_pubblicazioni_774_allegato.pdf
16. Iarc Handbooks of Cancer Prevention. Volume 7, "Breast Cancer Screening". Iarc Press, Lyon, 2002
17. Breast Screening Frequency Trial Group, "The frequency of breast cancer screening. Results from the Ukccr Randomised Trial". *European Journal of Cancer*, 2002; 38:1458-1464
18. http://pti.regione.sicilia.it/portal/page/portal/PIR_PORTALE/PIR_LaStrutturaRegionale/PIR_AssessoratoSalute/PIR_Are-eTematiche/PIR_Screeningoncologici
19. http://www.regione.calabria.it/sanita/index.php?option=com_content&task=view&id=414&Itemid=150
20. Osservatorio nazionale screening. Rapporto 2018. Available on <https://www.osservatorionazionalecreening.it/content/rapporto> Last access: 2020-05-24
21. Bocci G, Troiano G, Messina G, et al. Factors that could influence women's participation in colorectal cancer screening: an Italian study. *Ann Ig*. 2017;29(2):151-160. doi:10.7416/ai.2017.2142
22. Beydoun HA, Beydoun MA. Predictors of colorectal cancer screening behaviors among average-risk older adults in the United States. *Cancer Causes Control* 2008; 19(4): 339-59. doi: 10.1007/s10552-007-9100-y
23. Krishnan S, Wolf JL. Colorectal cancer screening and prevention in women. *Womens Health (Lond Engl)* 2011; 7(2): 213-26. doi: 10.2217/whe.11.7
24. Mandelson MT, Curry SJ, Anderson LA, et al. Colorectal cancer screening participation by older women. *Am J Prev Med* 2000; 19(3):149-54
25. Thu-Thon E, Charles R, Froger P, et al. The impact of a general practitioner training program on the colorectal cancer screening participation rate]. *Sante Publique* 2013; 25(6): 775-83
26. Wardle J, Miles A, Atkin W. Gender differences in utilization of colorectal cancer screening. *J Med Screen* 2005; 12(1): 20-7. doi: 10.1258/0969141053279158
27. Restivo V, Costantino C, Marras A, et al. Pap Testing in a High-Income Country with Suboptimal Compliance Levels: A Survey on Acceptance Factors among Sicilian Women. *Int J Environ Res Public Health*. 2018;15(9):1804. Published 2018 Aug 22. doi:10.3390/ijerph15091804
28. Studts CR, Tarasenko YN, Schoenberg N.E. Barriers to cervical cancer screening among middle-aged and older rural Appalachian women. *J. Community Health*. 2013;38:500–512. doi: 10.1007/s10900-012-9639-8.
29. Saulle R, Sinopoli A, De Paula Baer A, et al. The PRECEDE-PROCEED model as a tool in Public Health screening: a systematic review. *Clin Ter* 2020 Mar-Apr;171(2):e167-e177. doi:10.7417/CT.2020.2208. PMID: 32141490
30. Meggiolaro A, Unim B, Semyonov L, et al. The role of Pap test screening against cervical cancer: a systematic review and meta-analysis. *Clin Ter*. 2016 Jul-Aug;167(4):124-39. doi: 10.7417/CT.2016.1942. PMID: 27598026