



ORIGINAL ARTICLE

Knowledge about cancer screening programmes in Sardinia

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Keywords

Knowledge • Attendance • Cancer screening • Communication programme

Summary

Background. High level of attendance by population is considered a proof of the efficacy in the screening programmes. Public health aims to increase people's attendance to cancer screening. The study aimed at assessing the level of knowledge and awareness about screening of citizens in Cagliari, from June to July 2016.

Methods. Recruitment took place near the atrium of the two main shopping centres of the city. The sample included 270 adults (138 men), 18-75 years old (mean age 46 years old). The information gathered from interviews were categorized by dichotomizing answers according to the knowledge and understanding of the discussed topics. Descriptive analysis was performed. The Chi-square test was used to assess gender and educational differences.

Results. Results show that population's knowledge of screening is

limited. Although the word "screening" is known, only half of the people who declared to have heard of this word know about the aim of screening. Colorectal cancer screening is the least known. Men and people with lower education are less informed than women and those with high education level.

Conclusion. In order to raise knowledge and awareness about cancer screening, special attention should be paid to communication and to the use of plain language. Future action should highlight the benefit of the screening procedure and thus contributing to spread the cancer prevention culture. Gender and socio-economic inequalities must be taken into account when planning screening communication campaigns. General practitioner are highly trusted by people. They could play a decisive role to promote screening attendance.

Introduction

Cancer is a leading cause of global deaths after cardiovascular diseases. Because of disabling effects, cancer is now one of the most important priorities in terms of health. The World Health Organization (WHO) has reported that almost two-thirds of all cancers could be prevented or fully cured through regular cancer screening, combined with appropriate healthy lifestyles. Furthermore WHO has recommended that national efforts to screen for cancer should be enhanced [1].

The National Health Prevention Plan [2] promotes cancer screening and offers three screening programmes completely free of charge:

- screening for cervical cancer (Pap test), for women aged between 25 and 64 years, who are recalled every three years;
- screening for breast cancer (mammography) for women aged between 50 and 69 years, who are recalled every two years;
- screening for colorectal cancer (fecal occult blood test, FOBT), for both men and women, aged between 50 and 69 years, who are recalled every two years.

The Italian Ministry of Health assigned to the Osservatorio Nazionale Screening (National Observatory of screening - ONS) the coordination, monitoring, tech-

nical and scientific support to the Italian regions for planning and conducting population based organized screening in Italy [3]. The regional administrations are accountable for organizing, managing, assuring quality of screening programmes.

The efficacy and efficiency of screening programmes are influenced by a high level of participation in order to achieve a significant impact on population health [4, 5]. The report of the ONS shows a snapshot that describes the screening attendance rate in Italy, by indicating that the coverage of the organized screening is uneven on the national territory. In 2017, in Northern regions, the attendance at organized screening for cervical cancer was 51%, 37,4% in the central regions, and 28% in the Southern regions. The attendance to organized screening compliance for breast cancer reached 63% in the Northern regions, 53% in the Central regions, and 41% in the Southern regions. In Northern regions, organized screening compliance for colorectal cancer (fecal occult blood test) is around 52%, 35% in the Central regions, and 24% in the Southern regions [6, 7].

One of the goals of the Regional prevention plan of Sardinia is to increase the attendance of target population to the three organized cancer screening programmes [8]. The plan highlights the importance of analysing and defining the information needs, as well as the importance

of providing information and communicating with citizens about cancer screening.

Until now, in Sardinia, the communication campaigns were based on two main tools:

- an invitation letter addressing the target population;
- posters and brochures, available at any time on the institutional website of the Sardinia Health System, the website is accessible both to target and general population, and it provides helpful information and explanation about cancer screening.

Both tools try to answer to the most common questions concerning cancer features and screening procedures, also providing general information for specific cancer screening: breast, cervical and colorectal screening [9]. The high level of attendance of the informed population in the organized screening programme is one of the factors making possible the effectiveness of the screenings [2]. This ambitious goal can be reached through an informed and aware participation of every person. Moreover, before the attendance, people should know the benefits and the disadvantages of the screening programmes [4, 10-12].

An effective communication programme has to take into account citizens' limited health literacy, since a positive association between inadequate health literacy and low attendance at cancer screening is widely demonstrated [13-16].

According to the WHO recommendations and the Regional prevention plan of Sardinia, the aim of the present study was to assess the level of knowledge and awareness about screening among the general population (adults subjects aged ≥ 18 years old), belonging to the Local Health Unit of Cagliari. The study was carried out between June 1st, 2016 and July 31st, 2016.

Methods

Data were collected in the city of Cagliari, between June and August 2016, by means of a questionnaire, administered by interview. Each interview took about 5 minutes to complete.

STUDY DESIGN

The respondents were selected through a non-probabilistic sampling. Recruitment took place in the atrium of the two main shopping centres of the city; people passing through the atrium of these centres were invited to participate in the survey and subsequently they were interviewed. Trained interviewers collected data at different times of the day, both on weekdays and weekends. People who refused to answer were less than 10%.

QUESTIONNAIRE

The questionnaire included a section for the collection of socio-demographic data (age, gender, and educational level), as well as open-ended and closed questions in order to assess people's knowledge of some features concerning organized screening programmes.

Data on educational level were split in low (individuals who attended a school lesser than Senior high school) and high (individuals who attended Senior high school). The main topics explored through open-ended questions were the following:

- knowledge of the word "screening" (open-ended question) and awareness about the goal of cancer screening (open-ended question);
- knowledge of cancers for which a screening programme has been activated (open-ended question);
- knowledge of the name of the three tests used in cancer screening programmes (3 open-ended questions) and awareness of the goal of each test (3 open-ended questions);
- information source on cancer screening programmes (open-ended question).

Appendix 1 reports the questions.

In order to analyse data, the information gathered from the open ended questions were categorized by dichotomizing answers (yes vs no) according to knowledge and understanding of discussed topics.

STATISTICAL ANALYSIS

The sample size was 270 adults (138 men, 51%) aged 18-75 years old (mean aged 46 years old, standard deviation 16).

Descriptive analysis was performed through the estimation of the prevalence of the main variables, with 95% confidence intervals. The Chi-square test was used to assess gender and educational differences. Multivariate logistic regression analysis was performed in order to evaluate if gender, and educational level, as independent variables, are related to the awareness of the purpose of cancer screening (dependent variable).

Additionally, a multivariate logistic regression analysis was performed in order to evaluate if gender, and educational level are related to the awareness of the purpose of mammography (dependent variable).

Moreover, a multivariate logistic regression analysis was performed in order to evaluate if gender, and educational level are related to the awareness of the purpose of Pap test (dependent variable).

Again, a multivariate logistic regression analysis was performed in order to evaluate if gender, and educational level are related to the awareness of the purpose of fecal occult blood test (dependent variable).

A p-value < 0.05 was considered as statistically significant.

Results

Results have shown that the word "screening" is known by 77.4% [95% confidence interval (CI) 72.4%-82.4%] of the respondents, but among them, only 59.3% (95% CI 52.7%-66.0%) are aware that oncological screening is used for cancer early detection. People who stated to have heard about screening were asked to indicate which specific organised screening programme they had heard about. Screening for breast cancer was the most cited,

64.6% (95% CI 58.1%-71.1%), followed by screening for uterine cervical cancer, 49.8% (95% CI 43.0%-56.5%); screening for colorectal cancer was only cited by 39.2% (95% CI 32.6%-45.9%) of respondents. In addition, 32.1% (95% CI 25.7%-38.4%) of the respondents named other cancers, mentioning in particular prostate and lung ones.

Around 52.2% of the respondents, who stated to know the word “screening” knew that organised screening programme is free of charge.

In order to explore the general knowledge about the tests that are used in cancer screening programmes, participants were asked, for each of the listed tests, whether they had ever heard of them and whether they were aware of their aims. Almost all the interviewers had heard of mammography, 96.3% (95% CI 94.5%-98.8%), but only 63.6% (95% CI 57.8%-69.4%) knew that it can be used for early diagnosis. Similarly, a large proportion of the respondents knew about the Pap test, 87.1% (95% CI 83.5%-91.4%), but among them, only 57.6% (95% CI 51.3%-63.9%) were aware that it can be used for early diagnosis. Around 64.2% of respondent (95% CI 58.7%-70.2%), declared having heard of the fecal blood test but among them, only 61.5% (95% CI 54.3%-68.7%) is aware that the goal of the test is early diagnosis.

Gender and education level differences in knowledge about screening are reported in Tables I and II.

Results highlight knowledge differences about the purpose of cancer screening. Women and highly-educated people appear to be more aware than other groups about purpose and tests that are used for screening, especially about mammography and Pap test. Moreover, women appear to be more aware about the specific cancer screening programmes that are available, especially about breast and cervical cancers.

As for the source of information about cancer screening programmes, general practitioners and other health

professionals were indicated by 16.7% and 20.1% respectively, while mass media and friends/family were indicated by one-third of respondents (Tab. III).

More than half of the interviewed people would like to receive information on cancer screening programme from the general practitioner, 56.3% (95% CI 50.4%-62.2%).

Multivariate Logistic Regression analysis show significant associations between the awareness of the purpose of cancer screening (dependent variable) and independent variables gender and educational level: women are more aware than men [p = 0.02; odds ratio (OR) = 2.01; CI 1.13-3.60] ; individuals with high educational level are more aware than individual with low educational level (p = 0.02; OR = 2.18; CI 1.17-4.07).

Regarding awareness of the purpose of mammography, the multivariate logistic regression shows a significative effect of gender and educational level: women (p = 0.01; OR = 1.96; CI 1,19-3,25) are more aware of the purpose of mammography; individuals with high educational level (p = 0.02; OR = 1.81; CI 1.08-3.04) are more aware of the purpose of mammography.

Concerning awareness of the purpose of Pap test, the multivariate logistic regression shows a significative effect of gender and educational level: women (p < 0.001; OR = 7.15; CI 4.15-12.31) are more aware of the purpose of Pap test; individuals with high educational level (p = 0.02; OR = 1.93; CI 1.10-3.42) are more aware of the purpose of Pap test.

Considering awareness of the purpose of fecal occult blood test the multivariate logistic regression shows a significative effect of gender: women are more aware of the purpose of fecal occult blood test (p < 0.001; OR = 2.51; CI 1.52-4.15). Educational level does not result significantly associated to the awareness of the purpose of fecal occult blood test (p = 0.52; OR = 1.19; CI 0.70-2,01).

Tab. I. Knowledge and awareness about screening: differences between men and women.

	Men N (%)	Women N (%)	p value
How many people have ever heard of screening?	95 (68,8%)	114 (86,4%)	0,001
Among people having heard of screening, how many are aware of the purpose of cancer screening?	48 (50,5%)	76 (66,7%)	0,018
Among people having heard of screening, how many people did mention breast cancer screening?	49 (51,6%)	86 (75,4%)	< 0,001
Among people having heard of screening, how many mentioned cervical cancer screening?	19 (20,0%)	85 (74,6%)	< 0,001
Among people having heard of screening, how many mentioned colorectal cancer screening?	32 (33,7%)	50 (43,9%)	0,134
How many people have ever heard about mammography?	129 (93,5%)	132 (100,0%)	0,003
Among people having heard of mammography, how many are aware of the purpose of this test?	74 (57,4%)	92 (69,7%)	0,038
How many people have ever heard about the Pap test?	106 (76,8%)	130 (98,5%)	< 0,001
Among people having heard of Pap test, how many are aware of the purpose of this test?	39 (36,8%)	95 (73,1%)	< 0,001
How many people have ever heard of the fecal occult blood test?	82 (59,4%)	92 (69,7%)	0,078
Among people having heard of fecal occult blood test, how many are aware of the purpose of this test?	38 (46,3%)	60 (65,2%)	0,012

Tab. II. Knowledge and awareness on screening: differences in levels of education.

	Low education (%)	High education (%)	p value
How many people have heard of screening?	60 (62,5%)	149 (85,6%)	< 0,001
Among people having heard of screening, how many are aware of the purpose of cancer screening?	29 (48,3%)	95 (63,8%)	0,040
Among people having heard of screening, how many people did mention breast cancer screening?	33 (55,0%)	102 (68,5%)	0,070
Among people having heard about screening, how many mentioned cervical cancer screening?	26 (43,3%)	78 (52,3%)	0,238
Among people having heard about screening, how many mentioned colorectal cancer screening?	18 (30,0%)	64 (43,0%)	0,083
How many people have ever heard about mammography?	88 (91,7%)	173 (99,4%)	0,001
Among people having heard of mammography, how many are aware of the purpose of this test?	50 (56,8%)	116 (67,1%)	0,104
How many people have ever heard about the Pap test?	72 (75,0%)	174 (94,3%)	< 0,001
Among people having heard about Pap test, how many are aware of the purpose of this test?	38 (52,8%)	96 (58,5%)	0,411
How many people have ever heard of the fecal occult blood test?	55 (57,3%)	119 (68,4%)	0,068
Among people having heard of fecal occult blood test, how many are aware of the purpose of this test?	29 (52,7%)	69 (58,0%)	0,516

Tab. III. Information sources about screening (individuals gave more than one answer).

	Relative frequencies (sample 209)	95% Confidence Interval
General practitioner	35 (16.7%)	11.7%-21.8%
Other health professionals	42 (20.1%)	14.7%-25.5%
Mass media	54 (33.0%)	26.6%-39.4%
Internet	23 (11.0%)	6.8%-15.2%
Family members, friends	75 (35.9%)	29.4%-42.4%
Posters, leaflets	17 (8.1%)	4.4%-11.8%
Those who do not remember	14 (6.7%)	3.3%-10.1%

Discussion

Overall, the study shows that the general population's knowledge and understanding about organised cancer screening is rather limited. Results highlight that, although the word "screening" is widely known, only half of respondents who have heard of it are aware of the purpose of these tests (that is cancer early detection). Likewise, names for screening tests seem to be well known, individuals spontaneously mentioned mammography and Pap test; however, a large proportion of respondents seem not to know what these tests are for. Additionally, there is little knowledge about the specific type of cancers, which can be early diagnosed through organised screening programmes. The screening for colorectal cancer resulted to be the less known. Overall, men and individuals with lower education appeared to be less informed about screenings than women and individuals with high educational level. They appear the most vulnerable individuals to focus on with the aim of

increasing their knowledge and their awareness about cancer screenings.

These results should be taken into account in designing local interventions, in order to increase cancer organised screening attendance. Since several factors can prevent citizens to undergo screening (i.e. individual, logistic, or cultural factors), participation should be then promoted through different strategies [11, 14-16]. Health communication can be one of them, and it could be used to promote informed choices. Scientific literature suggests the effectiveness of communication programmes address to the general population [17-19]. Awareness about cancer prevention relevance will help the general population to take into account the importance of cancer screenings during their lifetime and then it could encourage them in taking part into screening programmes when needed. Although the words screening, mammography, and Pap tests are well known among the general population, their meaning in terms of early detection of cancer is still not understood. This aspect could be an indicator of low health literacy that should be better detected in future research.

Cancer screening campaigns should have the aim to favour and facilitate access to information in order to motivate people toward preventive health. Therefore, communication aiming at increase knowledge and awareness about screening should give special attention to language. In order to contribute to spread the cancer prevention culture, the benefit of early diagnosis of cancer should be emphasised by means of a plain language; thus the general population could become more aware of the importance of cancer prevention.

Men and people with lower education appeared to be not enough aware of the benefit of cancer screening; hence, communication campaign should be tailored to these categories, in order to tackle gender, as well as social and economic inequalities. [18, 20-22]. Likewise, it is

necessary to put particular attention to promote colorectal screening that appears the least known and with the lowest participation.

Finally, this study has indicated that general practitioners could play a decisive role in promoting screening attendance. In fact, the interviewees indicate the GP as the main source from which they would like to receive information on screening. This result suggests that patients highly trust their doctors; therefore, general practitioners could be the health professionals who could best contribute to increase people's attendance to screening programmes, by informing and encouraging patients to participate. General practitioners know their patients, they have the possibility to meet them and address discussion about the opportunity of cancer screening and clarify their doubts, they have the role of reassuring and, at the same time, alerting people about the importance of participating in cancer screening [12, 19, 24].

Acknowledgements

Funding sources: this research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of interest statement

The authors declare no conflict of interest.

Authors' contributions

MA, SC, conceived and designed the study, coordinated the study activities, analysed the data, interpreted results, drafted and edited the manuscript. CP conceived the study, contributed to data interpretation and critically revised the draft of the manuscript. CF, DC, GM, LL, LA, MM, McGDC, PMF, PL, SB, SA, collected data, performed literature search and data quality control, contributed to data analysis. IMT, OP, made contributions to the conception of the research and critically revised the draft of the manuscript.

All Authors revised the manuscript and gave their contribution to improve the paper. All authors read and approved the final manuscript

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APPENDIX 1

THE QUESTIONNAIRE

Gender: Woman ___ Man ___

Age ___

Education level: Low education level (less of Senior high school) ___
High education level (Senior high school) ___

1. Have you ever heard of cancer screening?
2. Can you tell me what the cancer screening is?
3. What kind of cancer screening did you hear about?
4. What are your main information source about cancer screening?
5. Who would you like to contact for more information on screening?
6. Do you know the purpose of cancer screening?
7. Have you ever heard of mammography?
8. Do you know the purpose of mammography?
9. Have you ever heard of Pap test?
10. Do you know the purpose of Pap test?
11. Have you ever heard of fecal occult blood test?
12. Do you know the purpose of fecal occult blood test?

Received on November 6, 2018. Accepted on October 16, 2019.

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How to cite this article: Mereu A, Concu F, Dessì C, Girau M, Ionta MT, Lai L, Liori A, Masala M, McGilliard CD, Origa P, Piazza MF, Pisanu L, Soggiu B, Sotgiu A, Contu P, Sardu C. Knowledge about cancer screening programmes in Sardinia. *J Prev Med Hyg* 2019;60:E337-E342. <https://doi.org/10.15167/2421-4248/jpmh2019.60.4.1094>

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