

Attendance in cancer screening programmes in Italy

Grazia Grazzini, Marco Zappa

Osservatorio Nazionale Screening, ISPO Istituto per lo Studio e la Prevenzione Oncologica, Firenze, Italy

Correspondence to: Grazia Grazzini, UO Prevenzione Secondaria Screening, ISPO Istituto per lo Studio e la Prevenzione Oncologica, Viale A. Volta 171, 50131 Firenze. E-mail: g.grazzini@ispo.toscana.it

Abstract

Background: The European Community recommends mammography, cervical and colorectal cancer screening programmes. In Italy, cancer screening programmes have been included in the Basic Healthcare Parameters (Livelli Essenziali di Assistenza) since 2001. Full national coverage of a population-based organized screening programme has been planned for in Italy and is being implemented. Since 2005, the Ministry of Health - Department of Prevention has formally charged The National Centre for Screening Monitoring (Osservatorio Nazionale Screening -ONS-) with monitoring and promoting screening programmes nationwide. Participation of target populations is a key indicator of the impact and efficacy of a screening programme in reducing cancer mortality.

Methods: Attendance of invitees is one of the indicators calculated every year in the quality control of Italian screening programmes. Data collection is organized by means of a structured questionnaire, sent by ONS to the referent for data collection in each Region, who then returns the completed questionnaires to the Regional Centre. Questionnaires are then sent to the National Centre. Logical and epidemiologic checks are performed at both levels. Every year ONS publishes reports on the results of the surveys. A feasibility study for a National data warehouse based on individual records is in progress. The national survey "Multiscopo sulle famiglie" and the Passi Study (Progetti delle Aziende Sanitarie per la Salute in Italia) provided additional information regarding spontaneous preventive health care activities in the Italian population.

Results: Mammography screening: In 2006, 78.2% of Italian women aged 50-69 lived in areas where organised screening was in place (theoretical extension), however, the distribution of the screening activity is not uniform (higher in Northern/Central Italy compared with Southern/Insular Italy). Similar geographical distributions can be noted in the attendance rates (60.5% in the North of Italy, 56% in the Central area and 38.3% in the South of Italy).

Cervical cancer screening: From the data obtained by the 2006 survey, 93.5% of theoretical extension was registered in the Centre of Italy, 65% in the North and 65.5% or in the South of Italy. 38.5% of invited women underwent a Pap-test. A decreasing trend in participation can be observed from Northern (45.6%) to Central (35.7%), and to Southern (28.7%) Italy.

Colorectal cancer screening: In 2006, theoretical extension of colorectal cancer screening in Italy was 44%, with significant differences in geographical distribution (66.1% in the North of Italy 48.5% in the Centre and about 10% in the South of our country). About 907,000 people had a faecal occult blood test in 2006 (adjusted compliance of 44.6%).

Data from the survey "Multiscopo sulle famiglie" showed that organised screening activity can reduce social inequalities of access to cancer screening, increasing screening utilization particularly in less educated people.

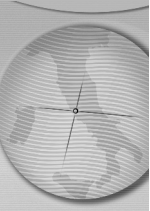
Conclusions: Organised cancer screening programmes have been extended in recent years, improving the equity in the access to early diagnosis for the people invited. However, social and geographical inequalities still remain.

Key words: attendance, mammography screening, cervical cancer screening, colorectal cancer screening

Introduction

The aim of the present paper is to discuss the attendance of the population in organized screening programmes. "Organized" screening is a

public health programme that involves the identification of the target population, an active invitation (generally by mail) to undertake a test, as well as management and evaluation of the



whole pathway from invitation to (eventually) surgical treatment. In a screening programme it is mandatory to guarantee equity in access to early diagnosis and in the quality of the following diagnostic and therapeutic pathway. In this context the issue of participation of the target population is crucial.

All screening programmes must be based on evidence of efficacy in reducing mortality (in some case also incidence) from that specific cause of death. At the moment the European Community recommends 3 screening programmes

- Mammography screening
- Cervical Screening
- Colorectal Cancer Screening

In Italy cancer screening programmes have been included in the Basic Healthcare Parameters (Livelli Essenziali di Assistenza) since 2001. Since 2005, the Italian Ministry of Health - Department of Prevention - in agreement with Commission of Regions and Self-governing Provinces Health Officials - has formally charged The National Centre for Screening Monitoring (Osservatorio Nazionale Screening -ONS-) with monitoring and promoting the screening programmes nationwide. ONS was constituted, six years ago, by the Italian League for Fight against Cancer (Lega Italiana per la Lotta contro i Tumori - LILT), in co-operation with the Italian Group for Breast Screening (GISMa), the Italian Group for Cervical Screening (GISCI) and the Italian Group for Colorectal Cancer (GISCoR). It is coordinated by a *Steering Committee* with a Representative of the Ministry of Health, a Representative from each of the Italian Regions, as well as a Representative from the Italian League for Fight against Cancer. It is directed by a *Technical Committee* of experts coming from the most experienced Italian Centres - Health Office of the Emilia-Romagna Region (C. Naldoni); the Oncological Prevention Centre (CPO) of the Piedmont Region (N. Segnan); ISPO Cancer Prevention and Research Institute (E Paci) and the Oncological Institute of the Veneto Region (M. Vettorazzi). ONS is located at ISPO in Florence.

Methods

Data collection on screening performance (a lot of data is collected, much more than just attendance) is organized in the following way.

Data are collected by means of a structured questionnaire, in a computerized form, which allows, with the use of automatic formulas, for the calculation of the indicators. The questionnaire refers to the previous year's activity and is stratified by age group. This questionnaire is sent

out by ONS to the referent for data collection in every Region. The Regional referent then distributes the questionnaire to the referents of every programme within the Region.

The filled-in questionnaires come back from the local programme to the Regional Centre and, subsequently, if approved by Regional referents, to the National Centre. Either at the Regional level or at the National level logical and epidemiological checks are performed. In particular, if the data are logically impossible or epidemiologically improbable (with respect to historical trends, to the performances of other programmes in the area, etc.) a specific check on that information is requested. The feasibility of a National data warehouse based on individual records is being considered, and a workgroup on this issue has been constituted.

Every year ONS publishes reports of the survey results.

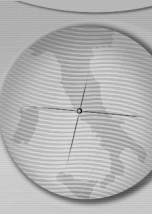
(see: <http://www.osservatorionazionalecreening.it/>)

Additional information regarding spontaneous activity in preventive health care of Italian population can be acquired from the national survey "Multiscopo sulle famiglie" and the study named "Passi" (Progetti delle Aziende Sanitarie per la Salute in Italia).

The first is a national survey "Multiscopo sulle famiglie - Condizioni di salute e ricorso ai servizi sanitari" carried out every five years by the ISTAT. It is based on a large sample (60,000 families) and it provides information about life styles or risk factors for health and the utilization of preventive tests among the Italian people.

The Centre for Disease Control and Prevention at the Italian Ministry of Health entrusted the Centro Nazionale di Epidemiologia, Sorveglianza e Promozione della Salute (CNESPS) of Italian National Health Institute (Istituto Superiore di Sanità, ISS), and the PROFEA (Programma di Formazione in Epidemiologia Applicata) with the task of developing a system for continuous surveillance over the adult population (PASSI - Progetti delle Aziende Sanitarie per la Salute in Italia). The aim of PASSI study is to estimate the frequency and evolution of behavioural risk factors for health and the diffusion of preventive measures in the Italian population. Passi is based on phone interviews carried out through a standardized questionnaire from a sample of people aged 18-69 years, randomly recruited from the Local Health Units' lists. All Italian regions participated to the study, with a total number of 123 Local Health Units involved in the data collection.

In comparison with the "Multiscopo sulle famiglie" survey, the Passi study included



additional questions about the motivation of people to adhere to a screening invitation and some questions about colorectal cancer screening test utilization.

Results

Mammography Screening

Mammography screening in Italy aims to invite all women aged 50–69 years once every two years, according to national recommendations [1]. In the early 90's, breast cancer screening activities in Italy were present only in a few areas of Northern and Central Italy, and it was only after the year 2000 that it was extended, resulting in the number of women involved in mammography screening programmes doubling in five years. In 2006, 78.2% of the 7.2 million Italian women aged 50-69 lived in areas where an organised screening was implemented (theoretical extension) and about 120 screening programmes were activated [2]. However, up to now the spread of screening is still heterogeneous, with a higher distribution in Northern/Central Italy (theoretical extension of 90-96%) compared with Southern Italy and the Italian Islands. In this part of the country, only 46% of women aged 50-69 lived in areas with an active screening programme (table 1), even if a positive trend can be noted considering that theoretical extension was only 10.6% in 2003 [3].

Analysing the actual coverage (percentage of women actually invited) reported in 2006 [2], 57.2% of the target population received an invitation for screening (it was only 41.4% in 2003), with significant differences when comparing Northern (75.7%) and Central Italy (70.9%) to Southern Italy (22.1%).

It is well-known that mammography screening can only be effective if a high proportion of the invited women attend, therefore the participation of invited women is a key indicator of the impact and efficacy of a screening programme in reducing breast cancer mortality.

Moreover, the mammography screening programme should aim to maximise participation not only in first round screening but, if a mortality reduction is to be achieved, women must also continue to participate in it. Adherence to mammography screening has been observed to fall in subsequent screening rounds [4]. It is important that health promotion, and clinical services are organised in such a way as to maximise continuing participation in the programme.

Time trends of attendance in Italian screening programmes

Figure 1 shows time trends of crude attendance (i.e. women attending out of those invited) for Italian mammography screening programmes during the period 1996-2005. This indicator was calculated considering all programmes adhering to the GISMa survey since 1996-1997 [3]. A significant decrease in attendance rates during 1999-2001 is evident, probably due to a high prevalence of newly implemented programmes during that period.

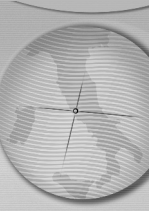
Adjusted attendance (i.e. ratio between examined women and invited women except women reporting a recent mammography) is a better indicator of actual adherence to an invitation, excluding from the denominator those women reporting a recent screening test performed outside the programme. Unfortunately, the reported overall attendance rate is probably underestimated because not all programmes could provide data to calculate this indicator.

The current Italian recommended standards for crude attendance are divided in acceptable (50%) and desirable (70%), whereas those for adjusted attendance are 60% and 75%, respectively [5]. According to those standards, crude attendance was above the minimal standard of 50% during the last 10 years, and in the period 2004-2006 attendance ranged from 55-57%, whereas adjusted attendance rate was about 60%.

The availability of a Regional screening coordination might influence attendance performance, given that participation rates are slightly higher in those Regions where centralised management exists.

The geographical distribution of attendance rates shows a significant lower participation of women invited to attend programmes in Southern Italy. In fact, in the year 2006 the crude attendance was 60.5% in the North of Italy, reducing to 56% in the Central area and it decreases to 38.3% in the South of Italy. Thus, many Regional programmes of Southern Italy were still below the minimum acceptable standard: this fact is partially explained by the consideration that most of the new programmes are in the South of Italy, thus attendance was affected as the programmes were still undergoing implementation.

Considering the adjusted attendance, no Region is above the optimal standard, whereas the number of Regions below the minimal standard has increased in the last few years. However, this parameter is probably underestimated, as already mentioned, since many programmes are unable to



provide information about women excluded because of a recent mammography. Moreover, because of a large variability of data even within a single Region, caution should be used while interpreting national and regional results.

In analysing attendance according to age it is possible to note that younger women have a higher level of compliance, a common finding in screening programmes. The highest attendance is recorded among women aged 55-64; this is a fairly young group of women who have been invited to participate in the screening programme for several years and who are more likely to participate.

Organised screening activity and spontaneous practice

Results from the national survey "Multiscopo sulle famiglie 2005" [6] may be particularly useful in understanding behaviours of Italian women with regards to preventive health care and the changes that have occurred during the period from the previous survey of 1999-2000 and the last one (2004-2005). In that time, in fact, spontaneous preventive practice was supplemented by an increasing offer from organised screening programmes.

Analysing these data, it is interesting to note that organised screening activity can reduce social inequalities of access to cancer screening: a higher increase of mammography utilization (from 51.8% in the period 1999-2000 to 65.5% in 2004-2005) has been recorded in less educated women, more than that observed in women with a higher educational status, and this effect is particularly evident in older women. The survey also provided data regarding the frequency of test utilization: 40% of interviewed women underwent mammography every two years according to the guidelines, but at least 30% of these women reported undergoing mammography every year, with the rest of the sample reporting an attendance frequency greater than 2 years. The Study called "Passi" (Progetti delle Aziende Sanitarie per la Salute in Italia) [7] provided additional information about the reasons for undergoing mammography in a sample of women living in several Italian regions. Results highlighted that an invitation letter from a screening programme was the most important reason in 44% of the sample, whereas 29% or 26% of women reported their principal motivation as being individual initiative or physician recommendation, respectively. The effect of a single intervention and the impact of combined strategies (invitation letter and physician advice) were also evaluated. In this analysis, the highest

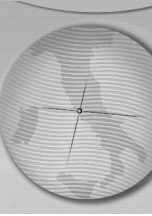
coverage (75%) was found in those who stated they received both physician counselling and an invitation letter. Adherence was significantly lower in unmarried women (49% versus 59%), in older (60-69 year) women (52% versus 61%), and in those with <9 years of education (55% versus 61%) [8]. Moreover, data from the Passi study or the National Survey "Multiscopo sulle famiglie 2005" also showed that the majority of women who underwent at least a mammography reported undergoing their test in a public practice (86% or 92%, respectively).

Colorectal cancer screening

Despite observational studies of subjects who have undergone flexible rectosigmoidoscopy (FS), and randomized trials using faecal occult blood tests (FOBT), which have provided evidence of the efficacy of screening programmes in reducing incidence and mortality for colorectal cancer, implementation of this screening programme has also remained relatively low for many years in Italy.

Compared to cervical or breast cancer screening, colorectal screening has some peculiarities. Italian current guidelines recommend [1] two screening tests, FOBT in subjects aged 50-69/74 or FS once in a lifetime (or with a frequency at least of 10 years) in subjects aged 58 or 60. Thus, a great variability in type of test, strategies and age of target population can be observed in colorectal cancer screening programmes in Italy. Most Italian programmes employ FOBT as screening test, but few have adopted FS or a combination of both. Variability can be noted also in the age of target population: all FOBT programmes except for one invite people starting at the age of 50, whereas the top age limit is 69 or 70 years in most programmes or even 74 or 75 years. FS programmes invite a single cohort of subjects aged 58, but some invite 60 years old subjects. In addition, colorectal cancer screening has another particular feature, being the first one involving the male population.

Colorectal cancer screening activity in Italy has grown mainly after the year 2004, when only 18 organised programmes were recorded, mostly in Toscana and Veneto. During 2006, 69 programmes, adopting FOBT, FS, or a combination of both, were already active in Italy. Theoretical extension of colorectal cancer screening in Italy was 44%, with significant differences in geographical distribution (Table 1). In fact, in North of Italy screening programmes cover half of the resident population, with a theoretical extension of 66.1%, whereas in the Central area this indicator was 48.5% and it decreases in the South of Italy to

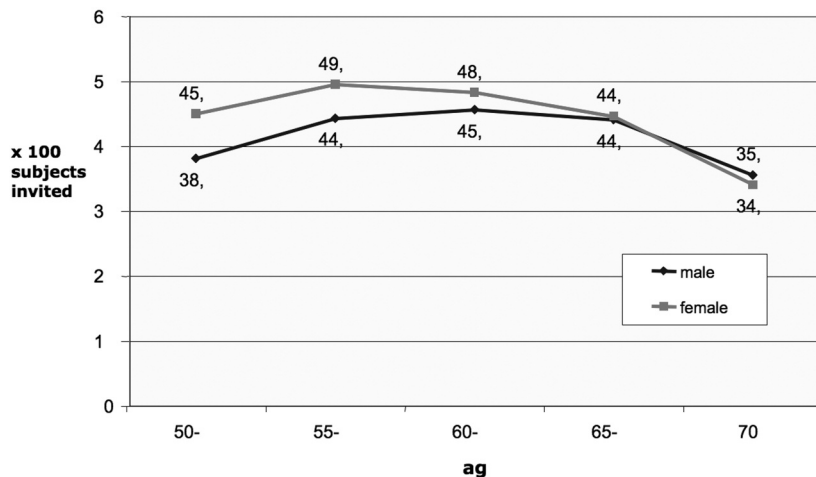


about 10%. In 2006, 2,107,000 subjects were invited to undergo screening with FOBT, accounting for 70.3% of the annual target

Table 1. Theoretical extension (%) of screening programmes according to geographical area. Year 2006.

	Mammography screening	Colorectal cancer screening	Cervical cancer screening
ITALY	78%	44%	69.5%
NORTH	96%	66.1%	65.0%
CENTRE	90%	48.5%	93.9%
SOUTH AND ISLANDS	46%	10%	65.6%

Figure 2. Colorectal Cancer Screening with FOBT: participation by sex and age. 2006 Survey. Modified from (11).



population (actual extension).

Attendance in Italian colorectal screening programmes

Attendance in colorectal cancer screening represents a critical issue. Vernon [8] performed an extensive literature review on participation, showing a median adherence rates to FOBT screening among studies of 40-50%. Rescreening rates were found to be less variable, and ranged between 60% and 90%. Rates of subjects adherence to FS screening were lower, and less variable, as well.

In Italy, about 907,000 people had FOBT screening in 2006 [9], with an adjusted compliance of 44.6%, lower than the one registered in previous years (46.5% in 2005 and 51.3% in 2004). In fact, in that year some programmes were activated only for a few months, thus the assessment of attendance was probably premature. It is important to note that this average figure underlies a great variability

among programmes, which ranged from 4.8% to 81%. The 10th percentile (the value under which 10% of the programmes with the lowest compliance are located) is 26%, thus not sufficient for allowing a good coverage of target population.

Comparing FOBT adjusted attendance registered in 2006 with the standards indicated by GISCoR [10], only 57% of screening programmes had a participation higher than 45% (acceptable standard).

FOBT participation by age and sex shows higher values in females, but only in younger age groups (50.3% vs. 44.5% for males, see also figure 2), and remains rather stable up to the 60-64-year old age group, decreasing in the oldest people.

The distribution of FOBT participation by screening history is very interesting. Adherence to first screening invitation was 43.8% with a distribution by age and sex similar to the overall attendance. Adherence in subjects who have had complied with a previous invitation was very high (83%), whereas 17.9% of subjects who declined a previous invitation

underwent FOBT screening, with a higher attendance rate in the younger people (24.6%) and lower in the older age group (9.5% in people older than 70).

For FS screening, 7,589 subjects were screened in 2006. Attendance to invitation was lower than that of FOBT programmes (29.2%, range 18.2-39.1%). In all programmes, participation was higher for males in comparison to females (overall: 30.2% vs. 25.6%), as showing also in the literature. Comparison between FOBT and FS attendance is difficult, due to the different geographical areas. The variability of values obtained by the single programmes shows the possibility of increasing the performance. In some programmes, subjects who refused FS invitation were invited to FOBT. This policy allowed a larger coverage of target population (for example, in 2006 in Turin coverage was 33.3% (28.4% by FS and 4.9% by FOBT) among males and 32.2% among women (24.4% and 7.8%, respectively).

Organised screening activity and spontaneous practice

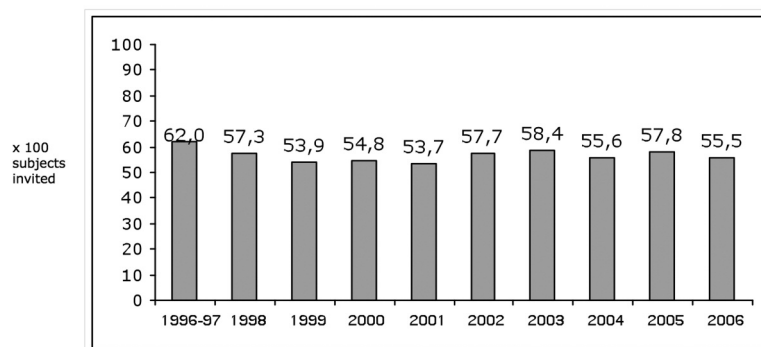
In Italy a spontaneous early diagnosis activity for colorectal cancer is probably negligible. In fact, data from surveys conducted by the National Centre for Screening Monitoring showed that the difference between adjusted participation (proportion of subjects invited to attend screening who underwent a screening test, after excluding those with a wrong address and those with a recent test) and crude participation is very small. Results from Passi study indicated that only 14% of the interviewed population sample aged 50-69 had undergone FOBT or FS screening, with significant geographic disparities (range: Toscana 34%, Sardegna 4%), according to the extension of organised screening programmes in these areas. It is noteworthy that men are more likely to be tested than women (men: 16.8% vs. women: 11.7%), contrary to what happens in organised colorectal cancer screening. In fact, National Surveys (9) showed a higher participation in female population as compared to males (47% vs. 43.5%, respectively, data from 2006 Survey). Several reasons can explain this gender differences in participation. In general, men tend to have lower use of medical services than women, but in this case it seems possible also that women, who are more used to responding to a screening invitation, can enhance partner participation in colorectal cancer screening.

Cervical cancer screening

Italian guidelines for cervical cancer screening, largely based on European guidelines, recommend that women aged 25 to 64 years receive a personal invitation for a Pap-test every three years, and that there is a monitoring system and quality assurance in each phase of the programme.

In 2006 the target population of Italian organised screening programmes amounted to 11,362,580 women (69.01% of Italian women aged 25-64), with 122 screening programmes active in the country. Clear disparities in geographical distribution exist, even if they are less evident than in the other two screenings. In fact, the 2006 survey [12] registered 93.9% of the theoretical extension in the centre of Italy, whereas in the northern or southern area of the country only 65% or 65.6% of women aged 25-64,

Figure 1. Mammography screening: overall crude participation (1996-2006). Modified from (3).



respectively, lived in areas with an active screening programme (Table 1). This particular distribution is due to the fact that some Northern Regional Governments didn't recommend the implementation of organised screening programmes, as spontaneously practice was very common. In the south of Italy, a positive trend can be noted considering that the theoretical extension increased from 50.2% to 65.6%, as compared to the previous year, mainly due to the new programmes activated in Calabria.

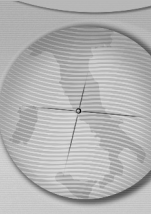
Attendance in Italian cervical cancer screening programmes

In 2006, Italian screening programmes invited about 2,900,000 women to attend, only about 27% of the target population, instead of the 33% necessary for inviting the whole target population at the 3-year recommended interval. 1,116,006 of the invited women (38.5%) accepted the screening invitation. A clearly decreasing trend (Table 2) in participation can be observed from Northern (45.6%) to Central (35.7%), and to Southern (28.7%) Italy. However, in the south of Italy the participation of invited women in a screening programme increased more than that registered in the rest of the country (it was 24.2% and 21% in 2004 and 2005, respectively).

Participation was higher than 30% in 13 Italian

Table 2. Cervical cancer Screening: participation (%) of invited population according to year of screening activity and geographical area. Modified from (12).

	2006	2005	2004
ITALY	38.49	36.71	37.74
NORTH	45.62	46.65	46.23
CENTRE	35.70	35.61	36.00
SOUTH AND ISLANDS	28.68	21.01	24.20



Regions and higher than 50% in Valle d'Aosta, Friuli-Venezia Giulia and Emilia-Romagna, where the Regional survey also included spontaneous practice. In evaluating the results of cervical cancer screening it must be remembered that many women received their Pap-test outside of an organised programme. Thus, there were different modalities among programmes in the management of spontaneous practice. In fact, some programmes invite women independently of their screening history, while some others only invite women who have not been self-referred.

Organised screening activity and spontaneous practice

It is possible to estimate that in Italy around 3.5-5 million women have had their Pap-test done as individual prevention. Such a number of tests would be sufficient for covering the entire Italian target population (about 16,400,000 women aged 25-64) over 3 years.

Data from the national survey "Multiscopo sulle famiglie 2005" (6) highlighted that 70.9% of women aged 25-64 have had a Pap-test at least once in their life, with a geographical gradient (more than 80% in north and centre of Italy and only 50% in the south). The majority of women (70%) who had a Pap-test reported to have had their test in a public or private practice covered by the NHS while the remainder had theirs in a private non-affiliated practice.

Regarding the frequency of screening test utilization, only 13.7% of interviewed women complied with the recommended 3 year interval, whereas 34.2% or 39.3% underwent Pap-test every 2 years or even annually, respectively. About 13% of women had Pap-tests either more or less frequently than three years. Comparing these data with the results from the previous period 1999-2000, we noted a slight reduction of percentage of women who underwent Pap-tests more frequently than every three years, and this was probably due to the increase in organised activities.

As reported for mammography screening, the "Passi" Study [7] provides interesting information regarding the reasons for having a Pap-test in a sample of women aged 25-64. Also in this case, an invitation letter from a screening programme was the most important reason in 44% of the sample, whereas 31% or 24% of women reported the principal motivation to be the physician's recommendation or their personal initiative, respectively. As already noted for breast cancer screening, analyzing the effect of single or combined interventions, the highest coverage was found among those who stated they had

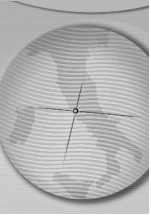
received both physician counselling and an invitation letter (83%).

Summary

Organised cancer screening programmes have been extended in recent years, allowing for greater equity in access to early diagnosis for those persons who are invited to participate. However, social and geographical inequalities still remain: overcoming these differences is a future challenge for the Public Health Service.

References

- 1) Raccomandazioni per la pianificazione e l'esecuzione degli screening di popolazione per la prevenzione del cancro della mammella, del cancro della cervice uterina e del cancro del colon retto, novembre 2006 [Italian recommendations for breast cancer, cervical cancer and colorectal cancer screening]. A cura dei Gruppi di lavoro nominati dai Decreti del Ministro della Salute (3/11/2004 e 18/10/2005), in applicazione della L. 138/2004 (art. 2 bis), Dipartimento Generale delle Prevenzione, Ministero della Salute. Available from: <http://www.osservatorionazionale screening/documentazione/raccomandazioni.htm>. [Accessed on october 2008]
- 2) Giorgi D, Giordano L, Ventura L, Frigerio A, Paci E, Zappa M. Lo screening mammografico in Italia: survey 2005 e dati preliminari 2006. [Mammography Screening in Italy: 2005 survey and 2006 preliminary results]. In: Rosselli Del Turco M, Zappa M (ed). Osservatorio Nazionale Screening. Sesto rapporto. Milano: Inferenze, 2007:20-35.
- 3) Giordano L, Giorgi D, Piccini P et al. Trend temporali di alcuni indicatori dei programmi di screening mammografico in Italia: 1996-2005. [Time trends of some process and impact indicators in Italian mammography screening programmes: 1996-2005]. In: Rosselli Del Turco M, Zappa M (ed). Osservatorio Nazionale Screening. Sesto rapporto. Milano: Inferenze, 2007:36-50.
- 4) Giordano L, Giorgi D, Frigerio A e il gruppo GISMa. Indicatori e standard per la valutazione di processo dei programmi di screening del cancro della mammella. [Process indicators and standards for the evaluation of breast cancer screening programmes]. *Epidemiol Prev* 2006;2 (Suppl 1):1-48.
- 5) Roberts M, Alexander F, Anderson T, et al. Edinburgh trial of screening for breast cancer: mortality at seven years. *Lancet* 1990;335:241-6.
- 6) La prevenzione dei tumori femminili in Italia: il ricorso a pap test e mammografia Anni 2004-2005. [Oncological Prevention in Italian women: pap-test and mammography utilization Years 2004-2005]. *Sanità Statistiche in breve*. Istituto Superiore di Statistica, 2006.
- 7) Gallo T, Binkin N, Baldissera S et al. La diffusione dell'attività di diagnosi precoce in Italia per lo screening cervicale (Studio PASSI, 2005). In: Rosselli Del Turco M, Zappa M (ed). Osservatorio Nazionale Screening. Quinto rapporto. Milano: Inferenze, 2006:140-46.
- 8) Gallo T, Binkin N, Bertozzi N et al. Predictors of Adherence with National Guidelines for Breast Cancer Screening in Italy: Results of Studio PASSI 2005. Poster Presentation of the 5th International Conference Behavioural Risk Factor Surveillance. Available from: <http://www.epicentro.iss.it/passi/pdf/conf-abstract.pdf>. [Access on octobr 2008].
- 9) Vernon SW, Laville EA, Jackson GL. Participation in breast screening programs: a review. *Soc Sci Med* 1990;30:1107-18.
- 10) Zorzi M, Falcini F, Grazzini G et al. Lo screening coloretale in Italia: survey 2005 e dati preliminari 2006. [Screening for colorectal cancer in Italy: 2005 survey and 2006 preliminary results]. In: Rosselli Del Turco M, Zappa M (ed). Osservatorio Nazionale Screening. Sesto rapporto. Milano: Inferenze, 2007: 70-84.



11) Zorzi M, Sassoli de' Bianchi P, Grazzini G, Senore C e Gruppo di lavoro sugli indicatori del GISCoR. Indicatori di qualità per la valutazione dei programmi di screening dei tumori colorettali. Manuale operativo [Quality indicators for the evaluation of colorectal cancer screening programmes]. *Epidemiol Prev.* 2007;31 (1 Suppi):1-56.

12) Ronco G, Giubilato P, Naldoni C et al. Livello di attivazione e indicatori di processo dei programmi organizzati di screening dei tumori del collo dell'utero in Italia. [Extension of organised cervical cancer screening programmes in Italy and their process indicators]. In: Rosselli Del Turco M, Zappa M (ed). *Osservatorio Nazionale Screening. Sesto rapporto.* Milano: Inferenze, 2007: 52-68.