

## Cancer screening in Spain

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**Objective:** To describe the current status of breast, colorectal and cervical cancer screening in Spain.

**Methodology:** The situation was analysed on the basis of data drawn from surveys conducted in each autonomous region (*Comunidad Autónoma*).

**Results:** Currently, breast cancer screening coverage is 100%. In 2007, overall participation was 67.0% with an adherence of 91.2%. The detection rate was 3.4‰, 15.1% intraductal and 30% invasive <1 cm in diameter, with 65% showing axillary node negative. Colorectal cancer screening had been implemented in six regions (4.5% of the target population). Participation ranged from 17.2% to 42.3%, with positive test percentages ranging from 1.7‰ (guaiac) to 9.5% (immunological). The invasive cancer detection rate was 1.7‰ (guaiac) and 3.4‰ (immunological). In most cases, cervical cancer screening was undertaken opportunistically, with an estimated coverage of 69.0%.

**Conclusions:** In Spain, cancer screening is being conducted in accordance with national and international recommendations. The fact that screening programmes are operated as a network has led to a high degree of consensus as to the methodology and information systems to be used to enable joint evaluation.

**Key words:** cancer, cervical cancer, colorectal cancer, screening, Spain

### Introduction

Cancer constitutes one of the major health problems in the developed world. In absolute terms, it is the leading cause of mortality in Spain, accounting for >25% of all deaths. The most frequent tumour sites are as follows: among men, lung, colon and rectum, and prostate [1, 2]; and among women, breast followed by colon and rectum. Cervical cancer accounts for only 3% of all tumours diagnosed.

As a secondary prevention activity, screening is a method that has shown itself to be effective in improving prognosis of a relevant number of patients in certain types of cancer. As far back as 2003, the European Union recommended that population-based breast, cervical and colorectal cancer screening be undertaken [3], and established the basic action criteria to guarantee quality and results in health terms. Since then, practically all European countries have implemented screening programmes, albeit with different organisational models [4]. In Spain, the 2009 National Health System (NHS) Cancer Strategy also recommends that such screening be conducted and lays down the minimum criteria for its implementation and development [5].

The organisation of Spain's NHS is decentralised, with responsibility being delegated to the regional health systems of

the country's 17 autonomous regions (ARs) (*Comunidades Autónomas*) and the autonomous cities (*Ciudades Autónomas*) of Ceuta and Melilla [6], each of which is responsible for local application of these programmes. This type of territorial organisation, with widely decentralised powers, has led to differing application of cancer screening policies in the various ARs. Nevertheless, 20 years ago, coinciding with the commencement in Spain of the first breast cancer screening programmes, a network was set up. This is the 'Network of Spanish Cancer Screening Programmes' (*Red de Programas Españoles de Cribado de Cáncer*) (initially covering breast cancer), which, in addition to sharing information and experience in this field, has allowed for inter-regional co-ordination aimed at reaching agreement on the basic criteria for implementation and development of the respective screening programmes, as well as defining the indicators that would, as far as possible, enable joint evaluation [7]. One example of this type of evaluation is the 'DESCRIC Report' [8], drawn up in 2006 for the purpose of describing at that time the status of screening in Spain and updating the pertinent scientific evidence.

This article describes the current status of implementation of the different screening programmes in Spain in respect of the three cancers for which screening is clearly recommended, namely, breast, colorectal and cervical, and the differences arising from the Spanish health system's decentralised organisation. Coverage indicators and, as far as possible, the results of the activities undertaken are analysed for each type of cancer.

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## subjects and methods

The organisation and development of the respective screening programmes is independent. Consequently, the methodology used for data collection and analysis was different for each tumour type, although the health structure of the ARs means that in many cases these come under the same departments and the same health officials and managers.

### breast cancer

The data shown here were drawn from the annual survey conducted by the Network of Spanish Cancer Screening Programmes for the purpose of updating information on the characteristics of each programme. Simultaneously, data on annual activity were collected in a structured manner so as to assess these programmes overall. This study analysed data for 2007, the last year for which final information was available.

Indicators were calculated as per the definitions laid down in the *European Guidelines for Quality Assurance in Breast Cancer Screening and Diagnosis* [9]. The results obtained were compared with the reference values established in the above-mentioned guidelines.

A total of 16 of the 19 ARs responded to the questionnaire, so that we had information corresponding to almost 90% of the activity undertaken (Table 1). In the case of one AR, there were no data on the age of the women examined (21 899 examinations, 1.7% of the total). Data broken down by type of examination were obtained for nine ARs, which accounted for 60% of the examinations (75% of initial examinations).

### colorectal cancer

With respect to colorectal cancer screening, these programmes form part of the Network of Spanish Cancer Screening Programmes. Applying similar criteria to those described above, a first questionnaire was drawn up which

gathered data on programme characteristics, i.e. year of introduction, target population, methodology, quality-control systems, etc. We agreed on assessment indicators, such as participation, positive test, invasive cancer and neoplastic lesion detection rates, and rate of advanced cancers, which would be analysed jointly for all programmes, in line with the criteria stipulated by the European Cancer Network group of experts in the quality guideline currently being drawn up.

This study describes the current status of this type of screening and analyses the data on the results of programmes that had concluded a minimum of a first round.

### cervical cancer

Almost all cervical cancer screening activity is undertaken opportunistically. Data on the status of the programmes and a description of the criteria upon which this activity is implemented were obtained by means of a questionnaire sent to the health officials and managers of each AR [8]. To ascertain coverage, including both public and private health systems, data from two surveys were analysed. These were the 2006 National Health Survey (*Encuesta Nacional de Salud*) [10] and a study which in 2005 evaluated practice and factors linked to cervical cancer screening in Spain, based on a survey of 6852 women aged 18–70 years drawn from 17 ARs (AFRODITA Study) [11].

## results

### breast cancer screening

Currently, Spain's 17 ARs and 2 autonomous cities all have population-based breast cancer screening programmes. Navarre was the first to implement its programme, with this being

**Table 1.** Women invited and explored by breast cancer screening programmes in 2007 (age range 45–69 years)

Autonomous region	Women invited	Women explored	Women explored by age group	Women explored by type of exploration	Initial screening	Subsequent regular screening <sup>a</sup>
Andalusia <sup>b</sup>	319 721	244 388	244 388	244 388	49 772	182 054
Aragon	52 425	35 410	35 410	35 410	7929	26 646
Principality of Asturias	54 561	41 860	41 860	NA	NA	NA
Balearic Isles	33 992	26 099	26 099	26 099	4580	11 860
Canary Islands	NA	NA	NA	NA	NA	NA
Cantabria	32 540	21 899	NA	NA	NA	NA
Castile–La Mancha	121 036	77 076	77 076	77 076	13 130	59 389
Castile–León	NA	NA	NA	NA	NA	NA
Catalonia	341 045	220 022	220 022	NA	42 897	NA
Valencian region	243 546	176 954	176 954	176 954	28 819	142 775
Extremadura	55 900	37 751	37 751	NA	NA	NA
Galicia	136 564	106 387	106 387	106 387	15 778	83 266
Madrid (region)	301 227	119 778	119 778	NA	NA	NA
Murcia (region)	60 798	43 425	43 425	43 425	7447	34 455
Navarre	44 084	38 031	38 031	38 031	3761	33 669
Basque Country	116 228	88 444	88 444	NA	NA	NA
La Rioja	16 759	15 525	15 525	15 525	2058	12 842
Autonomous City of Ceuta	651	569	569	NA	NA	NA
Autonomous City of Melilla	NA	NA	NA	NA	NA	NA
Total	1 931 077	1 293 618	1 271 719	763 295	176 171	586 956

<sup>a</sup>≤2.5 years since previous screening.

<sup>b</sup>Data corresponding to 80% of the autonomous region.

NA, not available.

initiated in 1990, and was progressively followed by the remaining ARs. All these programmes have already attained 100% coverage.

For each region Table 1 describes the number of women invited along with some relevant results. All the programmes included women aged 50–64 years in their target population: three started at age 45 years and, though they all began by having an upper age limit of 65 years, at the time of writing all had raised or were in the process of raising this to age 69 years (Table 2). In general, all women were personally invited every 2 years. In all cases, two mammographic projections were made during both the initial and—except in one programme—successive rounds. The classification used for mammogram reading was the Bi-Rads (or compatible) classification, and all regions used the physical quality control protocols established in the European Guidelines.

*participation.* Mean overall participation was 67.0%. On the whole, analysis by age group displayed no significant differences, though the trend was upward. Participation of women invited to the programmes for the first time was 63.8%, and showed a clear downward trend with age (Table 3).

Insofar as programme adherence was concerned, 91.2% (86%–97% depending on the AR) of all women who participated in the previous round, took part in the current round, thus indicating the acceptability of the programmes once a woman has joined them. As in the case of participation, there were no significant differences by age group.

*cancer detection rates and characteristics of diagnosed tumours.* The overall detection rate was 3.4‰ of explored women, showing a growing trend with age for both initial and

subsequent examinations, with the rate in all cases being higher in the first group.

With respect to type of tumour diagnosed, no data could be obtained in 12% of cases. Of the remainder, 15.1% were intraductal, with a slight difference between the two subgroups of women analysed. Almost 30% of invasive cancers were a maximum of 1 cm in diameter. A significantly lower percentage was observed among the initial group of women (20.8%) compared with successive groups (28.9%), though in both cases these percentages were close to the desirable reference values of 25% and 30%, respectively. In all, only 22.4% of invasive tumours exceeded 2 cm in diameter. In this case, the difference between women who were examined for the first time and those who had been previously examined was not quite as marked.

A little over 65% of tumours detected showed no ganglion infiltration. No difference was observed according to type of examination performed.

### colorectal cancer screening

In line with European Council and NHS Cancer Strategy recommendations, as a target of their health and/or oncological health plans Spain's ARs have been incorporating a commitment to conducting pilot studies for the implementation of population-based screening programmes and the development of strategies for care of high-risk individuals and families. Related scientific societies have made recommendations and drawn up clinical practice guidelines, insisting on the need for these types of programme to be implemented [12].

In 2007, consensus meetings were held to establish the methodology and information systems on which such programmes should be based, in order to ensure their quality and continuity [13].

*first-round coverage and results.* Of Spain's 17 ARs, six have initiated screening programmes, i.e. Catalonia, Valencian Region, Murcia, Basque Country, Cantabria and the Canary Islands, representing 40% of the Spanish population (Table 4). The remainder have undertaken to initiate this activity progressively in the short term.

The programmes currently in operation include men and women aged 50–69 years as their target population (except Cantabria which starts at age 55 years). In 2009, 418 973 persons were included in a screening programme (4.5% of the Spanish population in this age group, ~9500 000 persons), and by 2014 minimum coverage is estimated to be 50%.

The test used was the faecal occult blood test (FOBT), based on guaiac resin in the first round in Catalonia and Valencia, and on immunoassay in Murcia and the Basque Country. In subsequent rounds, the immunological test was also incorporated into the Catalanian and Valencian programmes. As far as periodicity was concerned, in all cases tests were repeated every 2 years.

The first-round results of pilot studies in four regions were available (Catalonia since 2000 [14], Valencia 2005, Murcia 2006 and the Basque Country 2008) (Table 5). Participation ranged from 17.2% to 59.0% (Catalonia attained a second-round figure of 22%).

**Table 2.** Characteristics of Spanish breast cancer screening programmes

Autonomous region	Year programme started	Year 100% coverage	Age group	Women invited 2007 (n)
Andalusia	1995	2005	45–69	319 721 <sup>a</sup>
Aragon	1997	2006	50–69	52 425
Principality of Asturias	1991	2000	50–69	54 561
Balearic Isles	1997	2009	50–69	33 992
Canary Islands	1999	2005	50–69	NA
Cantabria	1997	1997	50–69	32 540
Castile–La Mancha	1992	1997	45–69	121 036
Castile–León	1992	1996	50–69	NA
Catalonia	1992	2004	50–69	341 045
Valencian region	1992	2001	45–69	243 546
Extremadura	1998	2005	50–69	55 900
Galicia	1992	1998	50–69	136 564
Madrid (region)	1999	2001	50–69	301 227
Murcia (region)	1995	1999	50–69	60 798
Navarre	1990	1992	45–69	44 084
Basque Country	1995	2000	50–69	116 228
La Rioja	1993	1995	45–69	16 759
Autonomous City of Ceuta	2001	2006	45–69	651
Autonomous City of Melilla	1997	1997	45–69	NA
Total				

<sup>a</sup>Data corresponding to 80% of the autonomous region.

**Table 3.** Early indicators of screening efficacy for Spanish programmes overall, according to age group and type of exploration

	45–49	50–54	55–59	60–64	65–69	Unknown <sup>b</sup> (50–69)	Total 45–69	Total 50–69
<b>Total screenings<sup>a</sup></b>								
Women invited ( <i>n</i> )	128 405	554 340	471 830	440 535	303 427	32 540	1 931 077	1 802 672
Women explored ( <i>n</i> )	85 901	356 735	322 735	309 985	196 363	21 899	1 293 618	1 207 717
Participation rate (%)	66.9	64.4	68.4	70.4	64.7	67.3	67.0	67.0
Breast cancers detected ( <i>n</i> )	263	1010	931	1243	848	78	4373	4110
Breast cancer detection rate (per 1000 women)	3.1	2.8	2.9	4.0	4.3	3.6	3.4	3.4
DCIS (%)	12.9	15.7	13.7	11.5	12.1	19.2	13.3	13.3
Invasive (%)	83.3	71.0	73.3	75.1	77.6	73.1	74.7	74.1
Unknown/not available (%)	3.8	13.3	13.0	13.4	10.3	7.7	12.0	12.5
DCIS in cancers with data available (%)	13.4	18.2	15.8	13.3	13.5	20.8	15.1	15.2
Invasive cancers ≤10 mm/total cancers (%)	15.6	20.0	21.2	21.3	23.8	34.6	21.4	21.7
Invasive cancers ≤10 mm/total invasive cancers (%)	18.7	28.2	28.9	28.4	30.7	47.4	28.6	29.3
Invasive cancers ≤10 mm/1000 explored women (%)	0.5	0.6	0.6	0.9	1.0	1.2	0.7	0.7
Invasive cancers >20 mm/total invasive cancers (%)	31.1	21.9	23.8	21.0	21.1	19.3	22.4	21.8
Invasive cancers >20 mm/1000 explored women (%)	0.8	0.4	0.5	0.6	0.7	0.5	0.6	0.6
Node-negative invasive cancers/total invasive cancers (%)	59.8	62.8	66.7	68.5	69.1	82.5	66.7	67.1
Node-negative cancers/total cancers (%)	62.7	60.3	62.6	62.9	65.8	79.5	63.1	63.1
<b>Initial screening<sup>c</sup></b>								
Women invited ( <i>n</i> )	77 407	193 515	67 215	55 527	39 949		433 613	356 206
Women explored ( <i>n</i> )	40 608	97 549	17 820	12 800	7394		176 171	135 563
Participation rate (%)	52.4	50.4	26.5	23.1	18.5		40.6	38.1
Women invited 1st invitation ( <i>n</i> )	57 197	68 481	9379	6417	4814		146 288	89 091
Women explored 1st invitation ( <i>n</i> )	34 978	45 648	5895	4027	2809		93 357	58 379
Participation rate 1st invitation (%)	61.2	66.7	62.9	62.8	58.4		63.8	65.5
Breast cancers detected ( <i>n</i> )	150	324	80	115	57		726	576
Breast cancer detection rate (per 1000 women)	3.7	3.3	4.5	9.0	7.7		4.1	4.2
DCIS (%)	12.0	18.2	10.0	7.0	8.8		13.5	13.9
Invasive (%)	85.3	60.8	70.0	79.1	82.5		71.5	67.9
Unknown/not available (%)	2.7	21.0	20.0	13.9	8.8		15.0	18.2
DCIS in cancers with data available (%)	12.3	23.0	12.5	8.1	9.6		15.9	17.0
Invasive cancers ≤10 mm/total cancers (%)	14.7	16.7	11.3	8.7	22.8		14.9	14.9
Invasive cancers ≤10 mm/total invasive cancers (%)	17.2	27.4	16.1	11.0	27.7		20.8	22.0
Invasive cancers ≤10 mm/1000 explored women (%)	0.5	0.6	0.5	0.8	1.8		0.6	0.6
Invasive cancers >20 mm/total invasive cancers (%)	30.5	27.4	21.4	19.8	23.4		25.8	24.3
Invasive cancers >20 mm/1000 explored women (%)	1.0	0.6	0.7	1.4	1.5		0.8	0.7

Table 3. (Continued)

	45–49	50–54	55–59	60–64	65–69	Unknown <sup>b</sup> (50–69)	Total 45–69	Total 50–69
Node-negative invasive cancers/total invasive cancers (%)	60.9	64.0	64.3	80.2	53.2		65.1	66.5
Node-negative cancers/total cancers (%)	64.0	57.1	55.0	70.4	52.6		60.1	59.0
Subsequent screenings <sup>d</sup> (≤2.5 years since previous screening)								
Women invited (n)	48 277	144 254	168 173	163 707	119 145		643 556	595 279
Women explored (n)	43 415	130 997	155 794	152 745	104 005		586 956	543 541
Participaion rate (%)	89.9	90.8	92.6	93.3	87.3		91.2	91.3
Breast cancers detected	107	323	444	616	359		1849	1742
Breast cancer detection rate (per 1000 women)	2.5	2.5	2.8	4.0	3.5		3.2	3.2
DCIS (%)	15.0	13.6	14.4	12.8	13.7		13.6	13.6
Invasive (%)	81.3	83.0	75.2	75.8	84.1		78.9	78.7
Unknown/not available (%)	3.7	3.4	10.4	11.4	2.2		7.5	7.8
DCIS in cancers with data available (%)	15.5	14.1	16.1	14.5	14.0		14.7	14.7
Invasive cancers ≤10 mm/total cancers (%)	17.8	23.6	21.6	21.4	27.6		22.8	23.1
Invasive cancers ≤10 mm/total invasive cancers (%)	21.8	28.4	28.7	28.3	32.8		28.9	29.4
Invasive cancers ≤10 mm/1000 explored women (%)	0.4	0.6	0.6	0.9	1.0		0.7	0.7
Invasive cancers >20 mm/total invasive cancers (%)	28.7	20.2	26.1	25.3	16.6		22.9	22.5
Invasive cancers >20 mm/1000 explored women (%)	0.6	0.4	0.6	0.8	0.5		0.6	0.6
Node-negative invasive cancers/total invasive cancers (%)	60.9	63.4	65.9	63.0	71.2		65.3	66.6
Node-negative cancers/total cancers (%)	64.3	66.3	64.0	60.6	73.5		65.1	65.2

<sup>a</sup>Data included from all autonomous regions.

<sup>b</sup>Data correspond to a single autonomous region that includes women aged 50–69 years in its target population.

<sup>c</sup>Data included only from those autonomous regions that broke down the information by type of examination (80% of the total). DCIS, ductal carcinoma *in situ*.

The positive test percentage ranged from 1.7% to 9.5%, with an invasive cancer detection rate of 1.7‰ to 3.4‰.

### cervical cancer screening

In Spain, all ARs currently had cervical cancer screening programmes (Table 6), though these were mostly of the opportunistic type, except in La Rioja where the programme was population based (direct invitation by mail) and in Castile and León where, despite there being no direct appointment system, a protocolised awareness-raising campaign was directed at the target population so that they would seek screening. Some ARs were debating whether to complete the opportunistic strategy by implementing pilot projects that included other capture strategies. The scope of performance of the test was delimited to primary and specialised care, and family planning.

Programmes varied in terms of starting age and screening interval, reflecting the lack of consensus among scientific

societies, though in the NHS Cancer Strategy a recommendation is made in this regard. There was a predominance of protocols that included women aged 25–65 years, with a periodicity of 3–5 years.

In terms of technique, the Papanicolaou smear (Pap smear) was used in all ARs, in some cases with liquid-based cytology. Determination of the papilloma virus was used in some programmes for specific situations (cytologies of unknown significance, women with inadequate previous screening or at-risk populations).

*screening coverage.* The percentage of women effectively covered by the screening test in the target population was relatively high. In the 2006 National Health Survey [9], 69.0% of women aged >20 years reported having undergone cytology at least once, with percentages that ranged from 55% to 80% depending on the AR. In nine of the ARs studied, accounting for 54.2% of the Spanish population, this percentage ranged



**Table 4.** Characteristics of Spanish colorectal cancer screening programmes

Autonomous region	Catalonia	Valencian region	Murcia region	Basque Country	Cantabria	Canary Islands
Year of implementation	2000	2005	2006	2008	2008	2009
Age of target population (years)	50–69	50–69	50–69	50–69	55–69	50–69
Target population ( <i>n</i> )	1 541 917	1 080 728	257 778	490 371	93 543	369 027
Target population covered by programme in 2009, <i>n</i> (%)	84 278 (5.4)	176 562 (16.3)	35 741 (13.8)	28 173 (5.7)	20 219 (21.6)	74 000 (20.0)
Type of invitation	Personalised letter	Personalised letter	Personalised letter	Personalised letter	Personalised letter	Personalised letter
Screening test	Guaiac/immunological FOBT	Guaiac/immunological FOBT	Immunological FOBT	Immunological FOBT	Immunological FOBT	Immunological FOBT
Screening interval (years)	2	2	2	2	2	2

FOBT, faecal occult blood test.

**Table 5.** First-round results of colorectal cancer screening programmes in Spain

Autonomous region	Catalonia	Valencian region	Murcia region	Basque Country
Target population (1st round) ( <i>n</i> )	64 866	106 653	35 741	28 187
Population invited	63 880	98 682	35 741	27 245
Population examined (with valid test)	11 011	34 691	15 101	16 066
Participation rate (%)	17.2	35.2	42.3	59.0
Positive test, <i>n</i> (%)	372 (3.4)	579 (1.7)	1430 (9.5)	1269 (7.9)
Invasive cancers detected ( <i>n</i> )	23	59	52	55
Invasive cancer detection rate per 1000 population	2.1	1.7	3.4	3.4

from 60% to 70%. In five of these (37.9% of the total population), this stood at ~70%–80%, with the 80% mark being surpassed in only one (4.5% of the population). Overall coverage proved highest in the 45- to 54-year group (86.3%), and decreased in the younger and older groups (Figure 1). With respect to the screening interval, most women reported an annual periodicity in the performance of cytology, across all age groups (Table 7).

The results of the AFRODITA Study [11] reveal higher coverage figures. According to this study, 86% of women reported having undergone cytology at some time in their lives, 42% in the preceding year, 69% in the preceding 3 years and 75% in the preceding 5 years. The data indicated lower coverages among women who were older, had a low socio-economic level and came from rural areas. These figures ranged from 85.9% of women who had undergone at least one cytology in the preceding 3 years in the Canary Islands to 61.3% in Extremadura.

## discussion

Cancer screening has been proposed as an effective control method for certain types of cancer and in this respect has been recommended by numerous scientific organisations and societies. Europe is a model for implementation of organised population-based programmes and, in our case, the drawing-

up of European quality guidelines for breast cancer, cervical and, in the near future, colorectal cancer screening programmes, has been instrumental in the development of screening programmes in this country. This fact has been extremely relevant in discussions held at the screening programme network and has enabled consensus to be reached on indicators, quality criteria and assessment of regional programmes. As a result, one can now speak of a reasonably uniform screening programme in Spain for breast cancer, and probably for colorectal cancer as well. Likewise, existing initial differences have been reduced. Of equal note is the convergence, in terms of consideration being given exclusively to an opportunistic cervical cancer screening strategy, which is in evidence in all regions and is reflected in the NHS Cancer Strategy.

Since 1990, the year in which the first population-based breast cancer screening programme was implemented in Spain, the interest and priority devoted to its implementation and development have, in part, been endorsed by all health authorities, national and regional. Breast cancer screening programmes in Spain have already attained 100% coverage. Special mention should be made of the notable acceptability of screening mammography as part of organised programmes, as is shown by the overall participation and high degree of adherence.

Given the variability in implementation of programmes and the time elapsed since many of them were started, an accurate

**Table 6.** Principal characteristics of cervical cancer screening programmes in Spain

Autonomous region	Type of programme	Age of target population (years)	Periodicity	Technique used
Andalusia <sup>b</sup>	Opportunistic	20–60	Every 3 years	Cytology
Aragon	Opportunistic	35–64	After two normal annual cytologies, follow-up every 3–5 years	Cytology
Principality of Asturias	Opportunistic	25–65	After two normal annual cytologies, follow-up every 3 years	Cytology
Balearic Isles	Opportunistic	25–64	Every 3 years	Cytology and liquid cytology
Canary Islands	Opportunistic	18–65	After two normal annual cytologies, follow-up every 3 years	Cytology
Cantabria	Opportunistic	25–65	After two normal annual cytologies, follow-up every 5 years	Cytology
Castile–La Mancha	Opportunistic	25–60	Every 3 years	Cytology and liquid cytology
Castile–León	Scheduled	30–65	After two normal annual cytologies, follow-up every 3 years	Cytology
Catalonia	Opportunistic	25–65	Every 3 years	Cytology
Valencian region	Opportunistic	20–65	Every 3 years	Cytology
Extremadura	Opportunistic	20–65	After two normal annual cytologies, follow-up every 3 years	Cytology and liquid cytology
Galicia	Opportunistic	20–65	Every 3 years	Cytology and liquid cytology
Madrid (region)	Opportunistic	35–65	No periodicity	Cytology
Murcia (region)	Opportunistic	35–64	After two normal annual cytologies, follow-up every 5 years	Cytology
Navarre	Opportunistic	25–65	From 3 to 5 years	Cytology
Basque Country	Opportunistic	25–59	After two normal annual cytologies, follow-up every 3–5 years	Cytology
La Rioja	Population based	25–65	Every 3 years	Cytology

Modified from the DESCRIC Report.

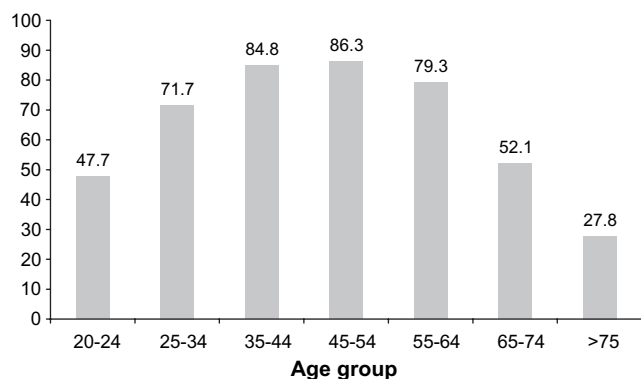
estimate of expected overall incidence in Spain could not be made but, judging by the partial results, the detection rate can be estimated to lie within the expected range. The types of tumour detected are consistent with the diagnostic in advance that these programmes yield. The various indicators—in the majority of cases in line with the recommendations established by the European guidelines and, moreover, similar to those in other countries [15]—suggest that mortality in Spain will decline significantly, as is indicated by the fact that this is already taking place in the regions where these programmes were originally introduced [16].

The situation with respect to colorectal screening is somewhat different. Compared with the extent of its deployment in other European countries, implementation of this type of screening is extremely limited in Spain [4]. Only six ARs are developing pilot programmes in the initial stages, though most of the remainder envisage initiating similar projects in 1 or 2 years' time. It is envisaged that colorectal screening will be extended to at least 50% of the target

population within a period of 5 years. The time of implementation will enable it to be extended, using the lessons learnt from the experience of implementing and developing breast cancer screening programmes. Indeed, the fact that from the outset a network of existing programmes is in place is a step in this direction.

The participation obtained in the programmes undertaken in Spain shows great variability and is below that obtained in other programmes in Europe, e.g. 56.8% in the UK [17] and 44.6% in Italy [18]. Informing the public as to the importance of this health problem and the possibilities of prevention and early diagnosis is crucial to enhancing the effectiveness of such actions.

Insofar as the percentage of positive tests is concerned, the differences can be attributed to the test used (guaiac or immunological), since these same differences are observed in other European programmes when different tests are also used [17, 18]. The same can be concluded with regard to the invasive cancer detection rate.



Source: 2006 National Health Survey. In-house

**Figure 1.** Percentage of women who have undergone at least one vaginal cytology. Distribution by age.

**Table 7.** Periodicity of performing vaginal cytology after the initial examination, according to age group (women aged  $\geq 20$  years who have undergone vaginal cytology at some time)

Age group (years)	$\leq 1$	2	3	5	$> 5$	Never
20–24	40.8	8.6	2.4	1.3	0.5	46.4
25–34	50.6	14.6	4.5	3.1	1.1	26.2
35–44	54.2	19.0	5.5	2.7	1.9	16.7
45–54	52.5	24.3	5.0	3.3	3.1	11.8
55–64	45.4	25.9	6.3	3.7	3.5	15.3
65–74	29.7	23.1	6.3	6.3	7.2	27.6
$\geq 75$	17.0	16.6	6.3	5.4	10.4	44.4
Total	47.4	20.0	5.2	3.41	2.97	21.0

Source: 2006 National Health Survey.

The principal argument used for applying cervical cancer screening with an opportunist strategy is the low frequency of this tumour in this country. Organised programmes have shown that both incidence and mortality are reduced: albeit to a lesser degree, opportunistic programmes also manage to reduce these rates [19, 20], though this type of strategy may entail inequalities of access.

The information furnished by cross-sectional studies and Spanish health surveys indicates that opportunistic screening coverages are high, though there is a difference of 17 percentage points between the two sources used [10, 11].

This difference may be linked to the different characteristics of the respective surveys, since, unlike the AFRODITA study in which this aspect was investigated to the exclusion of all others, the fact that many other health-related aspects are included in the National Health Survey might lead to a lower recall effort in specific responses on cervical screening. The data suggest, moreover, that whereas many women undergo cytology more frequently than is recommended, there are groups of women among whom coverage must nevertheless be improved (older women, rural areas and less privileged social levels).

In view of this situation and the absence of population-based programmes, most of Spain faces the challenge of boosting opportunistic screening in an attempt to attain the following

two fundamental goals: on the one hand, to improve coverage, particularly in the above-mentioned subgroups, so as to reduce inequalities of accessibility; and, on the other, to standardise criteria, in terms of both starting age and screening interval, so as to prevent many women from undergoing cytology more frequently than is recommended. Finally, a specific effort should be made by health authorities to assure screening test quality, which, in an opportunistic context, is something that merits special attention.

In conclusion, cancer screening practice in Spain is being performed in accordance with the pertinent national and international recommendations. Despite the decentralisation of health competencies in the respective regional health systems, the fact that screening programmes are operated as a network has led to a high degree of consensus on methodology and information systems, which in turn allows for joint evaluation and comparison of results.

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