

Evaluation of the first round of the national breast cancer screening programme in Flanders, Belgium

by

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Abstract

Introduction: *In June 2001, a breast cancer screening programme was started in Flanders for all women aged 50-69 years. Until that date, screening was opportunistic and devoid of quality control. In this paper, the evolution during the first two-year round is compared with the situation before the programme.*

Methods: *The study population comprised all women aged 50-69 years living in Flanders in the period 2000-2003. The data source was the reimbursement claims database of all social insured of the country, for mammograms, breast ultrasounds and magnetic resonance imaging.*

Results: *In the 2002-2003 period, the participation rate by screening mammography was 32.7%. When adding the participation to the still existing opportunistic screening (21.7%), the percentage of women who underwent a mammography amounts to 54.3% of the study population, as compared to 40.5% in the preceding two years. The programme has*

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also reduced inequities between age groups and socio-economic categories: almost all women participate in an equal manner. In 2003, as many as 77.3% of the diagnostic mammograms and 6.3% of the screening mammograms were followed within 90 days by additional imaging.

Conclusion: *This organised screening programme already reached a substantial proportion of the target group during its launch period. It also managed to attract women of all ages and of all socio-economic backgrounds. Yet, there remains a long way to go before reaching at least 70% of the target population. The other big challenge is to convince physicians to replace the diagnostic mammography and the ultrasound by the quality-controlled screening mammography.*

Keywords: *Belgium, mammography, mass screening, programme evaluation.*

Introduction

Since June 2001, the Belgian federal authorities together with the Flemish, the French and the German speaking communities organise a national population-based mammography screening programme (1). This national programme was set up in accordance with the guidelines of "Europe Against Cancer" (2-4) and aims at offering all women aged 50-69 years a biennial, free screening mammography with double reading (5).

However, the success of the screening programme in Belgium is affected by the existing opportunistic screening, as numerous women still undergo a so called 'diagnostic' mammography, often accompanied with ultrasound imaging. This 'diagnostic' mammography does not benefit from a systematic quality control of the equipment, there is no double reading and the patient is only partially reimbursed. Concerning the breast ultrasound, there is currently not enough evidence to recommend it as an additional screening tool (6-8).

Hence, one of the main challenges for the screening programme is to convince the physicians of the advantages of the screening mammography and make them replace the more lucrative diagnostic mammography by the former.

This study aims to assess the participation rate of the breast cancer screening programme in Flanders during its first round (2002 and 2003) by comparing it to the mammography utilization rate in the 2 years before, when only opportunistic screening was available. Incidental

differences in participation rate between these two periods are also studied in terms of age and socio-economic characteristics of women. Finally, additional imaging following a mammography is compared for the different periods.

Material and methods

Data were collected and analysed by the Intermutualistic Agency (IMA), that cumulates the data of all 7 Belgian mutualities (9). Mutualities are statutory sickness funds which provide the health insurance coverage. Since membership of a mutuality is compulsory for all citizens, the data of the IMA are exhaustive for Belgium and, consequently, also for the Flemish Region.

The IMA data are basically reimbursement claims data. They include information about cost, timing, place, prescriber and provider, but not about the indication, nor about the clinical results. In this study, all diagnostic mammographies, screening mammographies, breast ultrasounds and magnetic resonances, performed in ambulatory settings from 2000 to 2003 included, were considered.

The additional imaging was analysed on a sample of mammograms (diagnostic or screening) performed between March and May of the years 2001 and 2003, respectively. Only those additional tests (diagnostic mammography, ultrasound, MRI) performed within the 90 days following the reference test, were considered.

The IMA also has at its disposal socio-economic characteristics about its members: age, gender, place of residence and reimbursement schedule. Women in a precarious financial situation benefit from almost complete reimbursement of medical expenses and are called beneficiaries of preferential tariff (BPT).

The study population comprises all female Flemish Region inhabitants aged 50-69 years, still alive on the 31st of December 2003. Since the IMA data do not contain medical information, women with a medical history of breast pathology or with symptoms of breast pathology could not be excluded.

As participation rates were calculated by two-year periods, only women falling in the 50-69 years age category during the entire period and those still alive at the end of the two-year period, were considered in the denominator. The numerator covers the number of women with at least one mammography during the period. Because of the existence of the opportunistic screening before the start of the screening programme

and its continuation after the introduction of it, we distinguish 3 different kinds of participation rate. The first one is the participation rate by screening mammography which counts the number of women with at least one screening mammography, with or without a diagnostic mammography. Secondly, the participation rate by diagnostic mammography reflects how many women had at least one diagnostic mammography without any screening mammography. Finally, the total participation rate is the sum of both preceding rates.

The two study periods were chosen to match as closely as possible, albeit not perfectly, the chronology of the actual screening programme: the period 'before screening' comprehends the years 2000 and 2001; the 'screening' period covers the years 2002 and 2003.

In Flanders the screening programme officially started on the 15th of June 2001 but in most Flemish provinces the invitations for mammograms were not launched before several months later. Therefore we chose January 2002 as starting point of the first round of the organised screening programme.

Results

Study population

During the first period (2000-2001) 713,267 Flemish women were part of the study population. After application of the exclusion criteria – age 50-69 years during the entire period and alive at the end of the period – this number decreased with 10.6% to 637,514. During the screening period (2002-2003) the study population consisted of 715,356 women, from which 10.4% was excluded, to reach 641,281.

Table 1 illustrates the distribution of the study population over the 5 Flemish provinces.

TABLE 1
Study population by Flemish province and by period

province	2000-2001		2002-2003	
Antwerpen	174,02	27.3%	174,863	27.3%
Vlaams-Brabant	108,254	17.0%	109,193	17.0%
West-Vlaanderen	126,333	19.8%	127,125	19.8%
Oost-Vlaanderen	148,077	23.2%	148,179	23.1%
Limburg	80,830	12.7%	81,921	12.8%
Total	637,514	100.0%	641,281	100.0%

Table 2 summarises the age distribution of the study population. The age category 50-54 years stays stable throughout the two periods. In the screening period (2002-2003) the women aged 55-59 years represent 27.6% which is 2.8% higher than in the period before screening. The older age categories (60-64 years and 65-69 years) decrease by respectively 1.8% and 0.7% in the screening period. These changes are probably due to the combined result of the low birth rate during the war (1940-1944) and the baby boom after 1945.

TABLE 2.
Study population in Flanders by age category and by period

age category	2000-2001		2002-2003	
50-54 years	192,077	30.1%	191,874	29.9%
55-59 years	158,188	24.8%	176,697	27.6%
60-64 years	159,642	25.0%	148,740	23.2%
65-69 years	127,607	20.0%	123,970	19.3%
Total	637,514	100.0%	641,281	100.0%

In the period before screening 20.6% of women are beneficiaries of the preferential tariff (BPT). In the screening period 18.9% of women are BPT.

Participation rate

During the first round of the breast cancer screening programme (period 2002-2003) the participation rate by screening mammography was 32.7% in Flanders. When adding up those women having got a diagnostic mammogram (21.7%), the total participation rate amounts to 54.3%. This is 13.8% higher than in the period 2000-2001. Yet, two thirds of the women do still not participate in the organised screening (table 3).

TABLE 3.
Participation rate in Flanders by period

type of participation rate	2000-2001	2002-2003
participation rate by screening mammography	7.5%	32.7%
participation rate by diagnostic mammography	33.0%	21.7%
total participation rate	40.5%	54.3%

Figure 1 illustrates the variability in participation rates between the Flemish provinces.

Table 4 shows that the reimbursement schedule women benefit from influences their participation rate. In both periods women with a prefe-

Figure 1.
Participation rate by Flemish province in the screening period (2002-2003)

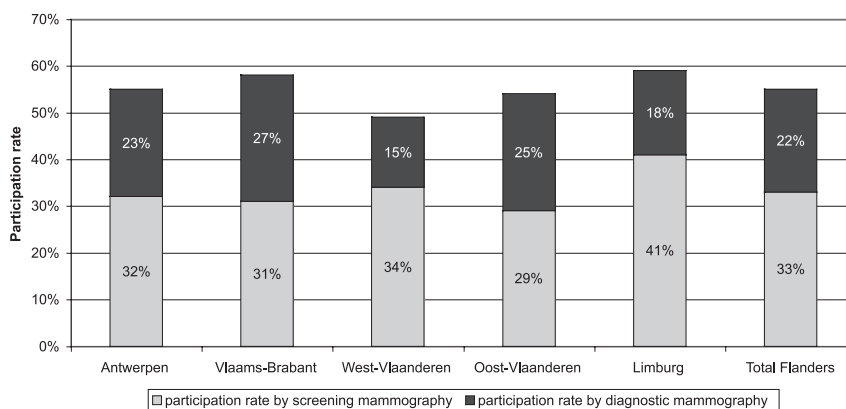


TABLE 4.
Participation rate in Flanders by reimbursement schedule and by period

reimbursement schedule	Participation rate by screening mammography		Participation rate by diagnostic mammography		Total participation rate	
	2000	2002	2000	2002	2000	2002
non beneficiaries of preferential tariff	7.7%	33.3%	35.4%	23.4%	43.1%	56.7%
beneficiaries of preferential tariff	6.9%	29.6%	23.9%	14.6%	30.8%	44.2%
Total	7.5%	32.7%	33.0%	21.7%	40.5%	54.3%

rential tariff received far less diagnostic mammograms than women without this preferential tariff. The difference in participation rate by diagnostic mammography between the two groups amounts to at least 11.5%. This inequity is no longer visible in the screening programme: in the period 2002-2003 the participation rates by screening mammography are almost identical for women in different socio-economic situations. The total participation rate, however, being the sum of diagnostic and screening mammographies, remains unequal.

Additional imaging

Table 5 illustrates that in 2001 72.6% of the diagnostic mammograms were followed by additional imaging within 90 days. This percentage, astonishingly, even rises up to 77.3% in 2003. Ultrasounds represent

TABLE 5
 Percentage of mammographies in 2001 and 2003 followed within 90 days
 by different types of additional imaging

type of mammography	% followed by diagnostic mammography	% followed by breast ultrasound	% followed by breast MRI	% followed by mammography ultrasound or MRI
diagnostic mammography in 2001	0.0%	72.5%	1.2%	72.6%
diagnostic mammography in 2003	0.0%	77.1%	2.0%	77.3%
screening mammography in 2003	3.4%	5.6%	0.5%	6.3%

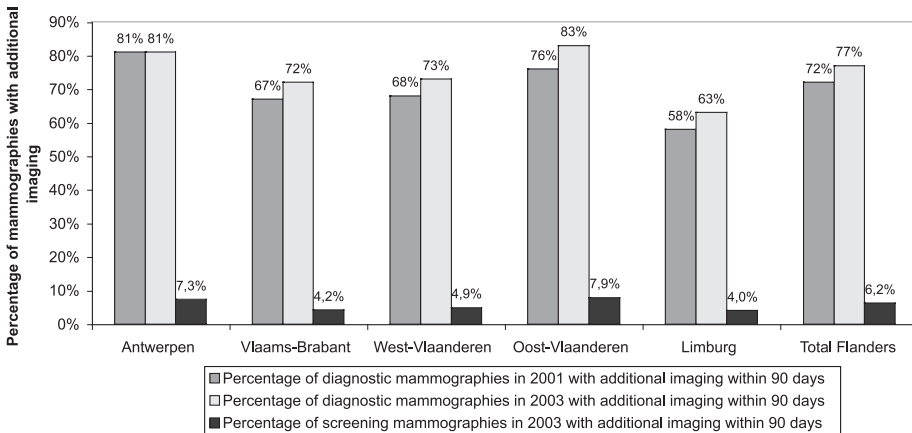
almost 100% of the additional imaging after a diagnostic mammography, whereas MRI is performed in 2% or less of the cases.

The frequency of additional imaging following a screening mammography was 6.3% in 2003. With this the “Europe Against Cancer” recommendation (4) that no more than 7% additional imaging be performed at the first screening round, is met.

A diagnostic mammography is performed after 3.4% of screening mammograms. A breast ultrasound after 5.6% and a MRI after 0.5% of screening mammograms.

Figure 2 illustrates the differences between the Flemish provinces.

Figure 2.
 Percentage of diagnostic and screening mammographies in 2001 and 2003 with additional imaging (diagnostic mammography of ultrasound or MRI) within 90 days



Discussion

After its first round, the national screening programme achieved a 32.7% attendance rate in Flanders. There is, however, a considerable variability between the Flemish provinces for which there are two possible explanations. Some provinces started up local pilot projects for breast cancer screening in the nineties and therefore had a head start when the national programme was launched in June 2001. In addition to this, the mailing of invitations commenced on different moments on the provincial level and could cause some delay.

The overall Flemish participation rate of 32.7% has to be evaluated in the perspective of the ongoing opportunistic screening. In spite of the free availability of the screening mammography, many physicians supposedly keep prescribing the 'diagnostic' mammography for opportunistic screening, lacking the quality assurance procedures recommended by "Europe Against Cancer" (4). As the percentage of biopsies subsequent to mammography is not very different among the patient populations from physicians with high utilisation of the diagnostic mammograms and ultrasound as compared to those predominantly using the screening mammography, we can infer that the diagnostic procedure is predominantly used for screening purposes as well. In this respect it is remarkable that the combination of diagnostic mammography and breast ultrasound still rises in 2003 despite the widely communicated message that breast ultrasound is not suitable for screening purposes in the general population (6-8).

In total, more than half (54.3%) of the women aged 50-69 years had a mammography – diagnostic or screening – in the period 2002-2003.

Unlike the opportunistic screening, the organised screening programme not only succeeds in reaching more women, it also manages to attract women of all ages and of all socio-economic backgrounds. Despite this success there is still a long way to go before reaching at least 70% of the target population and replacing the diagnostic mammography and the ultrasound by the screening mammography.

Meanwhile, all means should be used to inform women and physicians about the advantages of organised, qualitative and free breast cancer screening and to point out the disadvantages of the diagnostic mammography for screening: lack of quality control, high number of false positive results, unjustified high costs for the society and a less effective and less equal participation.

The ultimate objective of the screening programme is to decrease breast cancer mortality at population level (10-11). Two conditions have

to be fulfilled in order to reach this goal: a participation rate of at least 70% (4) and a high quality level of the screening (12-13) in Flanders by replacing the diagnostic mammography by the quality-controlled screening mammography. Both these aspects are still open to substantial improvement.

Samenvatting

Inleiding: *In juni 2001 startte in Vlaanderen het nationaal programma voor opsporing van borstkanker door mammografie bij vrouwen tussen 50 en 69 jaar. Voordien was de screening opportunistisch en verstoken van elke kwaliteitscontrole. In dit artikel vergelijken we de eerste tweejaarlijkse ronde van het screeningsprogramma met de periode voordien.*

Methode: *De studiepopulatie bestond uit alle 50- tot 69-jarige vrouwen woonachtig in Vlaanderen in de periode 2000-2003. De analyses gebeurden op terugbetalingsgegevens voor mammografieën, echografieën en NMR-onderzoeken van alle sociale verzekerden.*

Resultaten: *In de periode 2002-2003 was de couverture door screeningsmammografieën 32,7%. Wanneer we hieraan de participatie aan de opportunistische screening, die parallel blijft bestaan, toevoegen (21,7%), stijgt het percentage vrouwen van de studiepopulatie die een mammografie kregen tot 54,3%. In de periode vóór het programma was de couverture 40,5%. Bijna alle vrouwen participeerden op een gelijke wijze: het programma slaagde erin ook de oudere vrouwen en de vrouwen uit socio-economisch minder bevoorrechte milieus te rekruteren. In 2003 werd 77,3% van de diagnostische mammografieën en 6,3% van de screeningsmammografieën binnen de 90 dagen gevolgd door bijkomend beeldvormend onderzoek.*

Besluit: *De georganiseerde screeningscampagne bereikte tijdens zijn eerste ronde al een substantieel deel van de doelpopulatie. Ze slaagde er ook in vrouwen van alle leeftijden en socio-economische achtergronden in gelijke mate te bereiken. Maar, er blijft nog een lange weg af te leggen om minstens 70% van de doelpopulatie te bereiken en om de artsen ervan te overtuigen de combinatie diagnostische mammografie-echografie te vervangen door de kwaliteitsvollere screeningsmammografie.*

Résumé

Introduction: *En juin 2001, le programme de dépistage du cancer du sein a démarré en Flandre pour toutes les femmes de 50 à 69 ans. Jusqu'à cette date, le dépistage était opportuniste et sans aucun contrôle de la qualité. Dans cet article, l'évolution au cours du premier tour biennal a été comparée à la situation d'avant le programme.*

Méthode: *La population étudiée comprenait toutes les femmes entre 50 et 69 ans résidant en Flandre durant la période 2000-2003. La source des données était constituée des demandes de remboursement des tous assurés sociaux du pays concernant les mammographies, les échographies et l'imagerie par résonance magnétique des seins.*

Résultats: *Au cours de la période 2002-2003, la couverture par mammographie de dépistage, appelée mammotest, était de 32,7%. En ajoutant la participation au dépistage opportuniste encore existant (21,7%), le pourcentage des femmes ayant subi une mammographie s'élevait à 54,3% de la population étudiée, en comparaison aux 40,5% au cours des deux années précédentes. Le programme a réduit les inégalités entre les caté-*

gories d'âge et les catégories socio-économiques : toutes les femmes ont quasiment participé de la même façon. En 2003, près de 77,3% des mammographies diagnostiques et 6,3% des mammothests étaient suivies d'imagerie additionnelle dans les 90 jours.

Conclusion: Ce programme de dépistage a déjà atteint une partie substantielle de la population cible au cours de sa période de démarrage. Il a également réussi à recruter des femmes de tous les âges et de toutes les catégories socio-économiques. Il reste néanmoins encore du chemin à parcourir pour atteindre au moins 70% de la population cible. L'autre grand défi sera de convaincre les médecins de remplacer la contribution mammographie diagnostique et échographie par le mammothest dans le cadre d'un dépistage organisé et de qualité.

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