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Screening

Breast cancer screening programmes: Challenging the coexistence with opportunistic mammography

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ABSTRACT

Objective: This study investigated predictive factors of women's participation in organized mammography screening (OrgMS) and/or opportunistic mammography screening (OppMS) when the two screening modes coexist.
Methods: Questionnaires were sent to 6,000 women aged 51–74 years old invited to attend an OrgMS session between 2010 and 2011 in France. Data collected concerned the women's healthcare behaviour and their socioeconomic characteristics. Women without a personal or family history of breast cancer that could explain their participation in OppMS were retained in the generalized logits analysis.
Results: The data of 1,202 women were analysed. Of these, 555 (46.2%) had attended OrgMS only, 105 (8.7%) OppMS only and 542 (45.1%) had performed both OrgMS and OppMS. Multivariable analyses showed that women who had regular gynaecological check-ups were more likely to perform OppMS only or both OrgMS and OppMS, OR 95% CI were 2.1 [1.1–3.9], 1.9 [1.4–2.6], respectively. Being employed also increased participation in OppMS only [OR: 2.1 (1.2–3.7)] or both OrgMS and OppMS [OR: 1.5 (1.1–2.05)].
Conclusion and practice implications: In countries where OrgMS and OppMS coexist, strategies involving gynaecologists, referring doctors or company doctors and the organization of healthcare services to promote adequate screening round may help to reduce the overuse of mammography.

1. Introduction

The challenge of organized breast cancer screening programmes is to achieve high participation rates among the target population and consistency in the follow-up [1]. In France, organized mammography screening is a free service offered biannually to asymptomatic women aged 50–74 years old and consists of a clinical examination and a two-view mammography. By associating clinical breast examinations with the double reading of normal mammograms by a second radiologist, organized mammography screening (OrgMS) programmes ensure a higher rate of cancer detection at an earlier stage [2–7]. In many developed countries, OrgMS programmes coexist with opportunistic mammography screening (OppMS). OppMS is a screening mammography performed by women on their own initiative or following the advice of their family doctor or gynaecologist. Whereas population-based mammography screening programmes are performed according to Guidelines for Quality Assurance in Breast Cancer Screening and diagnosis [8], opportunistic screening is decentralized, and given the lack of systematic and reliable reporting, the evaluation of its effectiveness is severely limited [9]. Moreover, participation in OppMS could lead to an inadequate screening round. Indeed, in a study of factors that affected breast cancer screening round adequacy, Ouedraogo et al. reported that patients with an OppMS were more likely to have a long screening round (more than 26 months between two mammographies) or a

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short screening round (less than 22 months) than an adequate screening round (24 months) [10].

According to the Council of the European Union on cancer, in OppMS, some apparently healthy women receiving non-programmed mammography in a clinical setting may be older or younger than the recommended age for mammography screening [11]. And yet, the cost of every life year gained with opportunistic screening has been reported to be twice that of organized screening programmes [12]. Moreover, Bihrmann et al. [9] found that the specificity of organized and opportunistic mammography was fairly similar, but that the sensitivity was much better in organized screening, thus resulting in the overall superiority of organized programmes.

The coexistence of OrgMS and OppMS leads to a reduction in the participation in population-based programmes [13] and, probably, to the overuse of mammography. Indeed, some women could choose not to attend the OrgMS programme, while others could have a mammography every year if they have OppMS 12 months after their participation in the OrgMS programme. As Wait and Allemand [14] said, organized programmes of mammography screening started in contexts of prevalent OppMS will have difficulties convincing women not only to switch to organized screening but also to accept screening at 2-year intervals.

Despite many publications on the unnecessary utilization of health services, little is known about the overuse of mammography in a context where an organized breast cancer screening programme coexists with opportunistic screening [15]. Mammography is far from innocuous. According to the British National Health Service Breast Screening Programme, exposure to X-rays in mammography, could induce at least one fatal breast cancer per 14,000 women tested and screened three times in 10 years [16]. It is therefore important to analyse women's screening behaviour and to understand factors affecting their choice to attend OrgMS and/or OppMS when the two systems coexist.

Factors explaining non-attendance in OrgMS have been examined in many previous studies. A lower uptake of OrgMS among the youngest (50–54 years) and the oldest (70–74 years) women, as well as in women living in rural or in deprived areas has been reported [17–19], In socioeconomically deprived areas for example, people have other life priorities like seeking happiness and coping with everyday life rather than disease prevention. Access to healthcare facilities and general practitioners has also been reported as a factor that influenced participation in breast screening examinations [20–22]. In this study, we investigated factors affecting participation in OppMS only or in both OrgMS and OppMS when the two screening modes coexist in women invited to attend an OrgMS session in 2010 and 2011 in thirteen French geographical areas.

2. Population and methods

2.1. Population

The study was conducted in women living in thirteen French geographical areas including rural and urban areas: Côte d'Or, Nièvre, Rhône, Ain, Loire, Haute Savoie, Ardèche, Isère, Drôme, Doubs, Jura, Haute Saône and Territoire de Belfort. France counts 101 geographical areas which are territorial divisions between regions and districts. The geographical areas included in this study provided a good representation of women various socioeconomic backgrounds in France. Indeed, a study of France geographical areas published in 2013 [23], classified the areas included in this study as follows:

- the geographical areas of Ain, Rhone and Savoie were classified as metropolitan areas with a high socioeconomic level,
- the geographical areas of Côte d'Or, Doubs, Loire, Territoire de Belfort as geographical areas with high socioeconomic diversity,
- the geographical area of Nièvre as an area with low demographic dynamism,
- the geographical area of Ardèche as a very attractive rural area with high instability with regard to employment,
- the geographical area of Jura as a very attractive rural area with a low rate of unemployment and high employment in the primary sector.

In France, women aged from 50 to 74 years old are invited to attend a free OrgMS service every two years. Data on women aged 51–74 years old were retained to consider the delay between the invitation to attend a mammography screening session and having the examination. Data were provided by institutions in charge of organising cancer screening in each geographical area. About 12% of women eligible for BCS in France in 2010–2011 lived in the areas included in this study. These women were insured by the three main health insurance schemes. The potential sample included 66% of the women eligible for BCS in the thirteen geographical areas and corresponds to 709,764 women aged 51–74 years old, invited to attend OrgMS between January 2010 and December 2011 for whom the details on residential addresses were available.

In a study performed in 2010 by Pornet et al. [17], women from deprived areas were less likely than those from affluent areas to participate in OrgMS, OR and 95% CI were 0.71[0.59–0.86]. To detect an OR = 0.75 for participation in deprived areas, 6,000 women were randomly selected without replacements from the eligible population (709,764 eligible women) assuming: a one-sided significance level of 0.0083 (0.05/6 taking in account difference in participation according to the area deprivation and age); a power of 90% and that 50% of women will respond to the questionnaire. The selected women were stratified on age and according to the Townsend deprivation index [24] of their area of residence. The study was approved by the national ethics committees: "le Comité Consultatif sur le Traitement de l'Information en matière de Recherche dans le domaine de la Santé", "la Commission Nationale de l'Informatique et des Libertés" and the Ethics Committee of Besançon Teaching Hospital.

2.2. Exclusion criteria

OrgMS is recommended to all women aged 50–74 years old and all these women are invented to attend a mammography screening session every two years. However, according to the recommendations of French health authorities, the risk of breast cancer should be assessed during an oncogenetic consultation in women with previous breast and/or ovary cancer, those with a family history of breast and/or ovary cancer, those with an in situ lobular carcinoma, BRCA (Breast Cancer) 1 or 2 mutation and women with benign breast diseases. A 6-month or yearly screening round should be recommended to those with high risk. These mammographies are not considered OrgMS and are sometime reported as OppMS by women. As we could not distinguish between these mammographies and those performed by women on their own initiative, women who reported a personal history of breast cancer and those who reported a personal history of breast diseases and a family history of breast and/or ovarian cancers were excluded from the analysis. We also excluded women who did not report attendance at either OrgMS or OppMS.

2.3. Studied variables

A Questionnaire was send to the selected population to collect their personal and family characteristics between July and