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PATIENT FACING SYSTEMS

Communication Channels Used by Women to Contact a Population-Based Breast Cancer Screening Program in Catalonia, Spain

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Abstract

Communication is a corner stone of population-based breast cancer screening programs that need to invite all the women from their target population and provide them with balanced information on screening to guaranty informed participation. Invited women also need to be able to contact screening programs to get further information on screening procedures and/or cancel and reschedule appointments. This study describes the communication channels used by women invited for breast cancer screening to contact the program. The study population consisted of 141,684 women, aged 50–69 years, who were invited during 2015–2016 for screening by the Catalan Breast Cancer Screening Program (Spain). Multiple logistic regression models were performed to assess the association between age, screening history, socioeconomic status and reasons for contacting the program and the outcome variables (contact with the program; contact through information and communication technology (ICT) channels). Among the 141,684 women invited for BC screening, 22.5% contacted the screening office mainly to reschedule (42.2%) and cancel (29.2%) appointments. While the communication channel mostly used was the telephone, 24.8% of the women used ICT. ICT was more frequently used by women who had never been screened. Women who wanted to change their appointment were 65% (OR 1.65, 95%CI 1.54–1.76) more likely to use ICT than women who wanted to cancel it. This study showed the need to reinforce communication between women and breast cancer screening programs and the importance of offering communication channels suiting all women's needs to facilitate appointments' rescheduling and cancelling and therefore improve screening programs' efficiency.

Keywords Breast cancer screening · Communication channels · Information and communication technology

Introduction

The effectiveness of population-based screening programs substantially depends on participation [1]. To get optimal participation population-based breast cancer (BC) screening programs need to invite all the women from the target population to have a mammogram and at the same time offer them options to reschedule appointments in case they may not be able to attend the visit originally planned. On the other hand, population-based screening programs also need to take into account that all women invited for screening may not necessary be interested in having a mammogram. In Spain, for the period 2007–2008, the coverage of BC screening was 100%, however, overall participation was just below 70% [2]. Non-attendance to screening appointments can lead to equipment and personnel underutilization, increases in the costs of screening programs and reductions in appointments availability that may discourage first-time participation and/or decrease

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attendance to subsequent appointments [3]. To decrease non-attendance and reduce its consequences, population-based screening programs need to find the right balance between accessibility and sustainability. While there is evidence that reminders, and especially short message service (SMS), improve attendance to healthcare appointments [4], less is known about options that could facilitate rescheduling and cancelation, and therefore increase participation and time-slots reallocation. The recent increase in information and communication technology (ICT) use might represent an efficient way to improve two-way communication between invited populations and screening programs. Besides increasing screening programs efficacy and efficiency, improving communication could also be a way to provide women with balanced and accurate information on the benefits and harms of screening mammography [5, 6] in order to help them make an informed decision on their participation.

The present study had for objective to describe the communication channels used by women invited for screening to contact the office of one of the Catalan population-based BC screening programs.

Material and methods

The present observational study included all the women aged 50 to 69 who were invited for BC screening during 2015 and 2016 by the population-based screening program from the southern Barcelona metropolitan area (Catalonia, Spain). Over this period of time the screening office followed the routine procedure and sent to all women an invitation letter with a scheduled appointment (Fig. 1). While women who intended to participate did not need to confirm the appointment, the letter provided standard communication channels (phone call and face-to-face interaction) as well as channels based on ICT (SMS, website service and email) for women to choose from in case they needed to contact the screening office to cancel or reschedule an appointment. Women invited for the first time were also sent an information leaflet explaining the screening objectives and procedures along with the invitation letter. A reminder SMS was sent 3 days before the appointment to all women with a cell phone number registered in the population-based database from the National Health Service (approximately, 60% of the invited population).

The breast cancer screening information system included the communication channels used and the reasons for contacting the program (cancel, reschedule, confirm or other). Data on age, screening unit and prior screening participation were retrieved from the program database. Since no individual information on socioeconomic status (SES) was available, a deprivation score elaborated by the Catalan Agency for Quality and Health Technology Assessment and calculated for small areas of the Catalan territory, was used [7]. This score combines several context data on domains such as income deprivation, employment deprivation, health deprivation and average education.

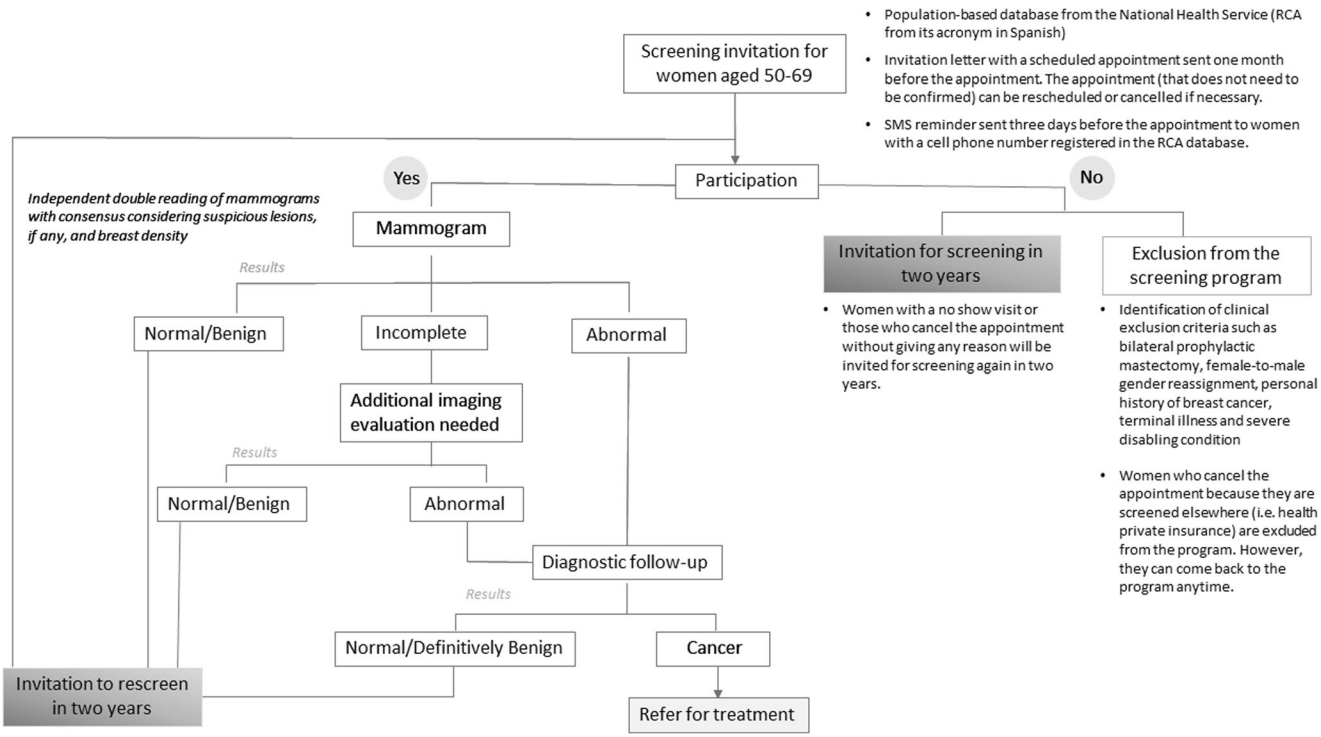

Fig. 1 Breast cancer screening flowchart

Descriptive analyses were performed to characterize the women who contacted the screening program, and those who used ICT. Multivariate logistic regression models were finally performed to assess the independent association between age, screening history, SES, and reason of the contact and the outcome variables (contact in general and contact through ICT). Odds ratios (OR) and 95% confidence interval (CI) were estimated.

Results

Among the 141,684 women invited for BC screening, 22.5% ($n = 31,852$) contacted the screening office and the main reasons for this contact were to reschedule ($n = 13,445$; 42.2%) and cancel ($n = 9286$; 29.2%) appointments (Table 1). The women who contacted the BC screening office mainly used the telephone ($n = 23,636$; 74.2%), however, 24.8% ($n = 7904$) used ICT.

Table 1 Description of study participants

	Women invited for breast cancer screening in 2015 and 2016 $n = 141,684$	
	n	%
Deprivation score[a]		
Quartile 1 (less deprived)	32,496	22.9
Quartile 2	43,367	30.6
Quartile 3	37,411	26.4
Quartile 4 (most deprived)	28,410	20.1
Age		
50–54	44,007	31.1
55–59	36,728	25.9
60–64	31,327	22.1
65–69	29,622	20.9
Screening history		
Previous participation	89,022	62.8
Newly invited	19,220	13.6
Never participated	33,442	23.6
Acceptance of the actual invitation		
No	55,328	39.1
Yes	86,356	60.9
Contact with the screening office		
No	109,832	77.5
Yes, through standard channels	23,948	16.9
Telephone	23,636	
Face to face	312	
Yes, through ICT channels	7904	5.6
SMS	4663	
Email	2384	
Web	857	
Reason for contact with the screening office[b]		
Change	13,445	42.2
Cancel	9286	29.2
Confirm	2042	6.4
Other	835	2.6
Unknown	6244	19.6

[a] Quartile of the Catalan population

[b] Percentages calculated among the 31,852 women who contacted the screening programme

Among the 9286 women who cancelled their appointment 32.8% ($n = 3050$) used ICT while only 21.0% ($n = 2823$) of the 13,445 women who rescheduled it used ICT; this difference was statistically significant (chi-square p value <0.000 – result not shown).

Older women and women from the most deprived area were less likely to contact the program (Table 2). Each 5-year increase in age decreased the probability of contact with the screening office by 17% (OR 0.83, 95%CI 0.82–0.84), while each 10-point increase in the deprivation score (ranging 0 to 100) decreased the probability of contact by 7% (OR 0.93, 95%CI 0.92–0.94). The women who had never been screened before were less likely to contact the program than those who had participated previously. The use of ICT was also significantly reversely associated with age and SES. While each 5-year increase in age decreased ICT use by 19% (OR 0.81, 95%CI 0.79–0.84), each 10-point increase in the deprivation score decreased ICT use by 11% (OR 0.89, 95%CI 0.88–0.91). The women who had never been screened before were more likely to use ICT. When compared to the women who wanted to change their appointment, those who wanted to cancel it were 65% more likely to use ICT (OR 1.65, 95%CI 1.54–1.76).

Discussion

The present study showed that one fifth of the women invited for a routine mammogram contacted the screening office and cancelling and rescheduling were the main reasons for this contact. Most contacts were made through conventional communication channels. Age and SES might be important determinants of communication between women invited for BC screening and their screening program office. Besides these factors, the type of contact, and in particular the use of ICT, might also be influenced by the reasons for contacting the program.

Communication between population-based screening programs and women invited for screening is essential. To be efficient and provide the maximum benefit to both invited women and screening offices, communication has to be bidirectional. Women need to get information on screening, they need to know screening procedures and be aware of the possible benefits and risks of breast screening. Taking into account the coexistence of benefits and harms associated with BC screening [5, 6, 8, 9], it is ethically necessary to make sure all women get complete and balanced information on BC screening to be able to make an informed decision about their participation. To efficiently provide all women from the target population with this information, screening program offices need to preferentially rely on inexpensive and widely used communication channels.

Besides receiving information from their BC screening program, women also need to be able to easily contact their screening program as often as they want to. This bidirectional communication will allow them to get all their questions answered but also to cancel and reschedule screening appointments when needed (in the present study cancellations and rescheduling represented 71% of the contacts). Cancellations and rescheduling,

Table 2 Factors associated with the contacts between the screening programme office and the women invited for screening

	Logistic model 1 including all the women invited to the breast cancer screening programme ($n = 141,684$) Outcome variable: contact with the screening office				Logistic model 2 including all the women who contacted the office of the screening programme ($n = 31,852$) Outcome variable: contact through ICT			
	n (%)	OR	95%CI	p-value[a]	n (%)	OR	95%CI	p-value[a]
SES (per 10 points)		0.93	(0.92–0.94)	0.000		0.89	(0.88–0.91)	0.000
Age (per 5 years)		0.83	(0.82–0.84)	0.000		0.81	(0.79–0.84)	0.000
Screening history				0.000				0.001
Previous participation (reference)	89,022 (62.8)	1.00			20,335 (63.8)	1.00		
Newly invited	19,220 (13.6)	0.81	(0.77–0.84)		4871 (15.3)	1.10	(1.01–1.20)	
Never participated	33,442 (23.6)	0.75	(0.72–0.77)		6646 (20.9)	1.15	(1.07–1.23)	
Reason for contacting the programme[b]								0.000
Rescheduling appointment (reference)					13,445 (42.2)	1.00		
Cancelling appointment					9286 (29.2)	1.65	(1.54–1.76)	
Confirming appointment					2042 (6.4)	3.18[c]	(2.88–3.51)	
Other and unknown					7079 (22.2)	0.71	(0.66–0.77)	

OR Adjusted odds ratios obtained from a multivariate logistic regression model

[a] These p-values indicate whether the explanatory variables significantly contributed to the logistic model;

[b] The reason for contacting the program was only included in the model having for outcome variable the contacts with the screening office through ICT;

[c] This OR mainly reflects replies to the reminder SMS sent by the program although this reminder SMS specifically asked women to only reply in case they needed to cancel or reschedule their appointment

when done with time, are important determinants of the efficiency of a screening program as they allow the re-allocation of some of the cancelled appointment slots which can reduce program costs.

Screening programs have numerous communication channels to choose from and making the right choice is complex as several parameters need to be taken into account and most communication channels have both advantages and drawbacks. For example, while SMS reminders have shown they can significantly increase participation [10], we also observed they trigger SMS confirmations that generate extra work for the screening office without being beneficial for the program. The present study also showed that communication channels can be used differently depending on the reasons for contacting the program (ICT use was more common in women who wanted to cancel their appointment than among those who wanted to reschedule it). These results indicate that "one size may not fit all" and that different communication channels need to be offered.

In Spain, despite the existence of a national health system, some inequalities in healthcare services access and utilisation do exist [11]. These inequalities have to be acknowledged and taken into account and efforts need to be made to reduce them. In the present study, the lower probability of contacting the screening program observed in older women and women from the most deprived areas underlines the importance to offer to all the different sub-groups of the target population options to contact the program suiting their needs, resources, aptitudes and knowledges. ICT use has increased over the last decades and might represent an efficient way to improve communication in screening programs. However, the introduction of new technologies needs to be done carefully to avoid widening inequalities in target populations. Disparities in ICT access has previously been described and referred to as the "digital divide" between people having access to ICT and those who do not [12]. Studies have analysed the digital divide and observed that the ubiquity of mobile devices might give access to people regardless of their socioeconomic status, ethnicity or location and therefore be an exception to the digital divide [13]. Nevertheless, because parameters such as age, literacy and language levels or the apprehension to use new technologies to manage healthcare appointments might still represent barriers, screening programs need to offer contacts through ICT channels, but they also need to maintain and/or introduce alternative channels, which reiterates the importance of offering a wide range of communication channels.

Conclusions

This study showed that communication between women invited for BC screening and screening programs should be improved and that offering a wide range of communication channels, allowing women to select the most convenient ones, could facilitate appointments' rescheduling and cancelations and therefore improve programs' efficiency.

Compliance with ethical standards

Conflict of interest Noemie Travier declares she has no conflict of interest, Carmen Vidal declares she has no conflict of interest, Montse Garcia declares she has no conflict of interest, Llúcia Benito declares she has no conflict of interest, Pilar Medina declares she has no conflict of interest, Víctor Moreno declares he has no conflict of interest.

Research involving human participants All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Ethical approval (ref PR046/17) was obtained from the Clinical Research Ethics Committee of the Bellvitge University Hospital (Spain) that did not require the use of informed consent forms for the study.

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