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The role of a lack of social integration in never having undergone breast cancer screening: Results from a population-based, representative survey in the Paris metropolitan area in 2010

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ABSTRACT

Objectives. This study aims to investigate the association between social contact and social support and women's breast cancer screening (BCS) practices, taking their socioeconomic status (SES) into account.

Methods. The SIRS survey was conducted in 2010 in the Paris metropolitan area among a representative sample of 3000 French-speaking adults. For the 784 women aged 50 years or older with no history of breast cancer, multivariate logistic regressions and bootstrap methods were used to analyze the factors associated with never having undergone BCS.

Results. 6.5% of these women had never undergone BCS. In multivariate analysis, being older, having a low education level, having poor-quality health insurance, and having one or less than one social contact per 3-day period were significantly associated with never having undergone BCS during their lifetime, but the level of social support was not. The strength of the association with a low frequency of social contact tended to increase with age.

Conclusion. This study analyzed the role of social contact in social inequalities in BCS practices in the Paris metropolitan area. Like SES, social integration and social isolation should be taken into consideration by public health professionals and practitioners when planning BCS programs and incentives.

Introduction

In France, breast cancer is the most frequent cancer among women, with an incidence of 52,600 new cases in 2010. Breast cancer screening (BCS) is done either through the national BCS program, in which screening is proposed to eligible 50- to 74-year old women every other year, or as an individual, opt-in screening procedure (Duport and Bloch, 2004; Duport et al., 2008). France's organized screening program has been in operation since 2004. Previously, only individual, opt-in BCS was available to women. In 1988, before there was an organized program, 10.3% of women aged 55 to 64 were screened annually and at the beginning of the 1990s, 3 million mammograms were already being conducted in France every year in women of all ages (Le Galès et al., 1990). We sought to determine the characteristics of never-screeners. Studies that have explored the relationship between women's social network and/or social support and their BCS practices have yielded mixed results, with some finding supporting evidence (Allen et al., 2008; Champion, 1994; Klassen and Washington, 2008; Paskett et al., 1996) and others not (Lerman et al., 1990). No study has ever examined these dimensions in the context of BCS in France, although this has been done for cervical cancer screening (Rigal et al., 2011). Social network interventions, which draw upon the influence of naturally occurring social systems, are increasingly used to promote BCS (Curbow et al., 2004; Legler et al., 2002; Lewin et al., 2005). These interventions, which are based on individual-level premises within one's social network, use “peer advisors” or “lay health workers” who are uniquely situated to provide information, role-modeling and social support in order to reduce logistical or emotional barriers to screening participation (Earp et al., 1997; Spitler et al., 2002). The objective of our study was to determine the association between a lack of social integration, together with socioeconomic status (SES), on never having undergone BCS among a representative sample of women living in the Paris metropolitan area.

Materials and methods

Study sample and outcome

The SIRS survey (SIRS: a French acronym for “Health, Inequalities and Social Ruptures”) was conducted in the winter of 2009–010 among a

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representative sample of the adult French-speaking population in the Paris metropolitan area for the purpose of studying the social inequalities in health and access to health care. The sample consisted of 3006 adults aged 18 to 101 years. The survey employed a stratified multistage cluster sampling procedure that overrepresented the poorer neighborhoods (census blocks). Its design, methods and sample representativeness were reported previously (Grillo et al., 2012; Renahy et al., 2008; Vallée et al., 2010). A questionnaire containing numerous demographic, social and health-related questions was administrated face-to-face during home visits. For this paper, the variable of interest was never having had a mammogram during one's lifetime, as self-reported by the women.

Independent variables

Even though organized BCS in France is recommended only for women aged 50 to 74, we decided to look at four age groups, one of which consisted of women over the age of 80, since they were in the target group when BCS recommendations were widely disseminated. In addition, women who had had breast cancer were excluded from the analysis. As we did in a number of previous analyses (Grillo et al., 2012; Vallée et al., 2010), the women's origin was distinguished as follows: a French woman born to two French parents (i.e., of French origin), a French woman born to at least one foreign parent (French-born to immigrants or foreigners) and a woman of foreign nationality (foreign immigrant).

As for the respondents' SES, we considered their education level, the monthly household income per consumption unit (in two categories, based on its median value in the survey sample), their socio-occupational category, and their health insurance status. The latter was divided into three categories: 1) women whose health-care expenses were fully covered by social security and a supplementary health insurance plan; 2) those who had free access to health care through a specific plan dedicated to the poor; and 3) those who had basic social security only (with no additional insurance). Women who stated that they did not have any health insurance at all (0.13% of the sample) were placed in the last group.

Regarding the respondents' social integration, we considered four different variables: their relationship status (having or not having a partner and living or not living with him/her), the presence of children in the household, the frequency of social contact, and their level of social support. The frequency of social contact was calculated from the sum of the (reported) average number of contacts with neighbors, family members, colleagues and/or friends (regardless of the type of contact: face-to-face, mail or phone). This frequency was then categorized as a dichotomous variable ($\leq$ or $>$1 contact per 3-day period). The social support questionnaire asked the respondents whether or not they could rely on someone for daily-life, financial and/or emotional support separately. The corresponding variable distinguished three levels of social support according to the number of positive answers for these three dimensions (low: 0–1; medium: 2; and high: 3).

The SIRS survey respondents were also asked about their health and health care, beliefs and experiences. Two questions were selected for our analysis: 1) “Has anyone in your circle of friends ever had breast cancer?”; and 2) “Has anyone in your family ever had breast cancer?”. For the analysis, they were merged into a new, 3-level variable (no one with breast cancer, someone among family *or* friends with breast cancer, and someone among both family *and* friends with breast cancer). Lastly, the reasons for not having had undergone BCS were investigated by means of closed, multiple-choice questions.

Statistical methods

For the comparison of the women's characteristics according to their screening status, frequency of social contact and level of social support, the chi^2 test or the exact Fisher test were used. All the independent variables (crude ORs) were introduced into a multivariate logistic regression model (full model) and were then backward-selected (final model). We fitted our models, given that the collected data were clustered by census block. A p-value <0.05 was considered significant for all the statistical analyses performed. We assessed the stability of our models by studying 100 same-size bootstrap samples from our initial study population, in which we studied the selection frequency of each independent variable by systematic backward selection. Also, by fitting our final model to these 100 bootstrap samples, we estimated the interquartile ranges of its parameters (Cox and Li, 2012). All the analyses were conducted using STATA 11.

Results

Description of the survey population

The analyzed sample included 784 women aged 50 years or older (up to 98) with no history of breast cancer. The mean age was 62. Half of these women were not in a relationship, and 40.6% indicated that they were living with their partner (Table 1). As for their socio-occupational status, 70.3% were in the workforce, and 26.2% were managers or executives. A large majority had a primary or secondary education level, and 40.7% had a tertiary level of education. Nearly 90% had high-quality health insurance. The vast majority (77.0%) were French-born to two French parents; 15.6% were French-born to at least one foreign parent, and 7.4% were foreigners. More than 10% had one or less than one social contact per 3-day period, and nearly a quarter of them (23.6%) had a low or medium level of social support.

Individual characteristics associated with never-screening

The vast majority of the women had undergone BCS at least once during their lifetime, but 6.5% (n = 51) of them had not. The never-screeners were significantly more often older, foreigners, partially insured or recipients of free health care for low-income individuals, and less educated than the screeners (Table 1). Never-screeners were also more prevalent among the women who reported having no one with breast cancer in their circle of friends than were the screeners. Of the two social integration indicators, only social contact frequency was associated with the outcome of interest. The three reasons given most often for never having undergone BCS were the feeling that the test was not necessary and/or that everything was all right (56.3%) and the fact that no one had ever suggested to them that they be tested (35.4%).

In the final model (Table 1), only being over the age of 80 (OR = 7.35, 95% CI = [3.31–16.31]), having basic health insurance (OR = 3.87, 95% CI = [1.72–8.70]), there being no one in the circle of friends with breast cancer (OR = 2.06, 95% CI = [1.01–4.46]), and having a low social contact frequency (OR = 2.85, 95% CI = [1.79–4.53]) were significantly associated with never having undergone BCS, and there was no significant interaction between them.

In the 100 bootstrap samples, four variables in the final model showed a frequency of selection higher than 80% (age: 100%; social contact frequency: 93%; quality of health insurance: 89%; and no one in the circle of friends with breast cancer: 84%) and were the four most frequently selected among the 11 variables. All the estimates in the final model were included in their respective bootstrap interquartile ranges.

Even though the interaction between age and social contact frequency was non significant, we chose to explore it a little further (Table 3). Two points are worth noting. First, the oldest socially connected women were as likely to have never undergone BCS as the younger, socially isolated women (respectively, OR = 5.97, 95% CI = [2.48–14.34] and OR = 5.54, 95% CI = [0.97–31.80]). Second, the older, socially isolated women were 15 times more likely to have never been screened than the younger, socially connected women (OR = 14.78, 95% CI = [6.07–36.00]). In terms of BCS, the impact of a lack of social contact seemed to be greater in the older age groups than in the younger ones.

Individual characteristics associated with poor social integration

The most socially isolated women were the oldest ones: 23.3% of those aged 80 or over had one or less than one social contact per 3-day period (Table 2). A low level of social support was observed mostly among single women and women with a low income or a low education level. After adjustment for age, only not being in a relationship (OR = 3.65, 95% CI = [1.79–7.45]) and a low or