

The views of older women towards mammographic screening: a qualitative and quantitative study

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Full title: The views of older women towards mammographic screening: a qualitative and quantitative study.

Short running title: The views of older women towards mammographic screening.

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Abstract.

Purpose: Mammographic screening has improved breast cancer survival in the screened age group. This improved survival has not been seen in older women (>70 years) where screening uptake is low. This study explores the views, knowledge and attitudes of older women towards screening.

Methods: Women (>70) were interviewed about breast screening. Interview findings informed the development of a questionnaire which was sent to 1000 women (>70) to quantify their views regarding screening.

Results: Twenty-six women were interviewed and a questionnaire designed. The questionnaire response rate was 48.3% (479/992). Over half (52.9%, 241/456) of respondents were unaware they could request mammography by voluntary self-referral and were unaware of how to arrange this. Most (81.5% 383/470) had not attended breast screening since turning 70. Most (75.6%, 343/454) felt screening was beneficial and would attend if invited. Most, (90.1%, 412/457) felt screening should be offered to all women regardless of age or health.

Conclusions: There is a lack of knowledge about screening in older women. The majority felt that invitation to screening should be extended to the older age group regardless of age or health. The current under-utilised system of voluntary self referral is not supported by older women.

Keywords: breast cancer; oncology; older age; mammographic screening

INTRODUCTION

One third of all breast cancers in the UK are diagnosed in women over age 70 (ONS, 2005). Older women present with the disease at a later stage than their younger counterparts (Diab et al, 2000, Wyld et al, 2004). The mortality for breast cancer has fallen in most age groups, due both to screening and improved adjuvant therapies. This improved survival has not been seen in older women and mortality is increasing in women over 85 years (DoH, 2009). This may be due to older women being less aware of breast symptoms (Siapush & Singh, 2002), or the lack of screening, both of which may contribute to later diagnosis. In addition, adjuvant chemotherapy and trastuzumab are rarely offered to women over 70 in the UK (All Breast Cancer Report, 2009).

In the UK, the NHS Breast Screening Programme (NHS BSP) invites all women for triennial mammographic screening between 50 and 70 years of age (extension to age 73 is planned). Once a woman reaches 70, she may continue to have screening, but only if she requests it.

The introduction of breast screening has reduced the death rate from breast cancer by 25-39% in the screened age group, (Tabar *et al*, 2003) with 5 year survival rates for screen detected cancers of 96% compared to 70% for cancer presenting symptomatically (BASO, 2006). However, there is little direct evidence that screening is of benefit to older women. Galit and colleagues (2007) reported that screening women aged 75-84 years was associated with a reduced breast cancer mortality. However, others have failed to show this association, (Schonberg et al, 2009, Badgwell et al, 2008). In older women the influence of competing causes of death may reduce any potential gain from early detection.

However screening does result in the diagnosis of smaller, earlier stage cancers in older women (Galit et al, 2007) and a significantly reduced mastectomy rate (27% screened versus 52% symptomatic, Cheung et al, 2009).

The evidence is now very compelling that breast screening does overdiagnose cancers: i.e. it identifies cancers that would not have presented symptomatically in the women's lifetime. The rate of this occurrence is of the order of 25-40% (Gotzsche et al, 2009; (Morrell et al, 2009). For these women the harms of screening are very real: the unnecessary treatment which may include mastectomy, the use of chemotherapy, radiotherapy and psychological distress (Gotzsche et al, 2009)

In the UK, breast screening uptake in the over 70s is low with only half of older women aware that they are eligible for screening and only 19% aware of how they can access the service (Kumar et al, 2004). Knowledge about breast cancer is also poor in older women, (Grinfeld et al, 2002), particularly knowledge about breast cancer symptoms and level of risk (Linsell et al, 2008). Many older women believe they are less susceptible than younger women (Mah and Bryant, 1992).

In summary, mammographic screening rates are much lower in women over 70, contributing to a later stage at diagnosis and a worse prognosis. At present we know little about the factors that may prompt older UK women to attend for screening.

The aim of this study was to examine the views, knowledge and attitudes of older women (>70 years) towards mammographic breast screening.

METHODS

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Ethics committee approval was obtained. Written informed consent was obtained for each interview. Consent for the questionnaire was presumed if the questionnaire was completed.

The interview schedule and postal questionnaire were developed by the study team and piloted on members of a local Consumer Research Panel (Collins, 2006) to ensure content and face validity (Ritchie & Spencer, 2003). Both methods explored the participants' knowledge of and views towards breast screening, factors influencing uptake and views regarding the current format and organisation of screening for the over 70's. The interview themes extracted were used to construct a questionnaire which was extended to a wider population of older women to determine attitudes and correlations with patient characteristics. Most of the questions were constructed as a statement with a Likert format for the response.

Qualitative Interviews

An interview schedule was used to guide discussion to the issues of interest, (breast cancer, screening, current and preferred screening arrangements). In-depth, semi-structured interviews were undertaken with 26 purposively selected older women (>70 years) from out patient clinics (surgical, medical, breast) in one UK hospital. Inclusion criteria were: female, aged over 70 years, able to read and write in English and able to give informed consent. Exclusion criteria were: moderate or severe cognitive impairment.

Recruitment ceased once data saturation had occurred. The interviews were recorded and transcribed. Analysis followed the National Centre for Social Research 'Framework'

approach to identify recurrent themes (Ritchie & Spencer, 2003). All interviews and data analysis were undertaken by two senior researchers (KC and MW). A thematic index was drawn up and applied to the data. Data was entered into thematic charts and examined to allow interpretation of the data and to identify any relationships between themes.

Postal Questionnaire Survey

The questionnaire was devised from themes generated from the qualitative interviews, a systematic literature review and expertise from the study team. The questionnaire comprised 64 questions (with mainly 5-point Likert scale response options) divided into the following sections: demographic details and health characteristics, breast cancer risk factors, past and current breast screening attendance, knowledge and views about breast screening and views about alternative methods of arranging screening for older women. To maximise salience, content and face validity, ease of administration and acceptability of the questionnaire (Boynton & Greenhalgh, 2004), it was piloted on eight members of the North Trent Cancer Research Network Consumer Research Panel (Collins, 2006). Sampling was via GP practice lists. For the purposes of sample size estimation, we assumed that the primary outcome from the questionnaire survey of older women was to estimate the proportion of women in this age group who would like to have further screening. We assume that this proportion was around 50%, and to estimate this within +/- 5% (i.e. 95% confidence interval 45% to 55%) required around 400 responders to the survey. The questionnaire was distributed to 1,000 women, assuming a 40% response rate, to meet the recruitment target of 400 women.

Practices identified all women on the practice list aged over 70, but excluded women with significant cognitive impairment. Eligible patients were sent the questionnaire by post. Data was analysed using the Statistical Package for Social Scientists (SPSS version 17) using descriptive data to summarise clinical characteristics of the responders. The chi-squared test was used to examine associations between attitudes to screening and categorical variables (such as age, breast cancer risk category, functional status and number of co-morbidities). Other outcomes from the survey such as the number and proportion in this age group who would like to have mammograms, were reported along with the associated 95% confidence interval.

RESULTS

Qualitative Interviews

One hundred and four eligible women were approached for interview and 26 consented, (25%). Interview duration ranged from 20-60 minutes. The age range was 70-90 years (median 75). All participants were white European. Seven of the 26 women had a previous history of breast cancer. Fifteen were regular attenders and 11 non-regular attenders of breast screening up to the age of 70 years. Since reaching 70 years, five women had self referred for screening. There were no identified variations between the different age subgroups: under 75, between 76-85 or older than 85 years or between women with or without a history of breast cancer.

The thematic frame categorised the data into five themes: breast awareness and behaviour (including risks and benefits), breast screening knowledge and uptake, views about the views of older women towards mammographic screening: a qualitative and quantitative study 22 March 7 2010

screening over 70 (important factors influencing women's decisions) and views of the current system of self referral. The interview findings are presented alongside the questionnaire data below.

Questionnaire Survey

Respondent Characteristics

During 2009, 1000 questionnaires were posted to all eligible women over 70 registered with 4 participating GP Practices. The overall response rate to the questionnaire survey was 48.7% (479/983). No reminders were sent out. Therefore we were unable to compare the characteristics of responders and non responders in terms of screening views, age or health status. The median age of respondents was 75 (range 70 to 95). Respondent characteristics are shown in Table 1. No significant differences in responses were found between age cohort or women with or without a history of breast cancer. Most respondents reported having at least one long term health problem (87.7%, 420/479), 53.2% (255/479) >2 health problems, 27.9% (134/479) 3-4 health problems, 6.5% (31/479) reported 5 or more health problems. Just over three quarters of the respondents (76.2%, 359/471) were functionally independent.

Breast awareness and behaviour

The overwhelming message from both the interviews and questionnaires was of a lack of knowledge about both breast cancer and breast screening: in terms of risks, how to access screening and how to examine themselves. Sixty-two percent (297/479, 95% CI 58 to 66%)

of women indicated that they believed the NHS would have invited them for breast screening over the age of 70 if it would benefit them.

'They said to me we 'shan't be sending for you again, because we don't send for people after 65 years old', and at the time I thought 'Oh, well fair enough. That must be the time that they think you are out of danger.'(ID 75, age 75)

Most were unaware that breast cancer risk increases with age: 41.5% (193/479) said they didn't know, 34.6% (161/479) thought the risk was the same and 14.2% (n=66/479) thought the risk was lower in the over 70s.

'I have always had the thought, that as you get older these things don't get hold of you the same...that they're not likely to kill you the same as a younger person. I don't know whether that's right or not.'(ID 03, age 82)

Rates of breast self examination were low, with only 23.6% (112/474) examining themselves regularly compared to 51.7% (n=245) occasionally or rarely and 27% (129/478) never. The older women (> 85 yrs) were less likely to examine their breasts (55%) compared with the younger age group 70-74 yrs (78.4%). Most felt that they did know how to perform self examination, (80.8% (350/433) having learnt from a range of sources: 58.1% (112/193) by a nurse; 23.3% (45/193) by their GP; 9.3% by a hospital doctor and 9.3% (18/193) through the media, either TV or magazines).

Breast screening knowledge and uptake

Most respondents (73.1%, 328/449, CI 69 to 77%) had regularly attended breast screening when eligible (Table 2), particularly the younger age group (94.4% 70-74yrs). Of the women who had attended routine breast screening 19.6% (74/378) stated they had been anxious about attending, 44.6% (169/379) stating the mammogram was uncomfortable, with 23.3% (88/378) describing it as painful. However, despite this, the majority of women (71.2%, 270/446) appreciated the reassurance that they did not have breast disease. Most (81.5% 383/470, CI 77.8 to 84.8%) had not attended breast screening since turning 70 and the rate fell as age increased, (Table 2). Women with a history of breast cancer were significantly more likely to be advised by HCP to attend breast screening since becoming 70 ($P<0.001$) than women without a history of breast cancer and more likely to be called back for further tests ($P<0.001$). Reasons for non attendance are shown in Table 3.

Both interview and survey data suggested women were uncertain about eligibility for breast screening. Just over half the women (52.9%, 241/456) were unaware that they could request mammography or knew how to access it. Of those that were aware of the service 45.8% (70/153) were told at their previous screening visit, 21.6% (33/153) had heard about it through the media, 13.1% (20/153) had been told by family or friends, 9.2% (14/153) were told by their GP and the remaining 10.6% (16/153) from a combination of the above.

Views about screening in the over 70s

Most women (75.6%, 343/454, CI 71.4 to 79.3%) felt that breast screening was beneficial and would attend if invited. Benefits expressed within the interviews suggested that the most influential factor for attending screening was to increase life expectancy. Women also believed that if breast cancer was detected early, major surgery and longer hospitalisation could be avoided. Women also talked about their wish to maintain optimal quality of life and gain some 'peace of mind' knowing that they were clear of breast disease (Figure 1).

'Just piece of mind really, just the hope that they're not going to find anything, and if there was anything that they would, that it was early enough, for them to do something about it.'

(ID 15, age 78)

In contrast, few women were aware of possible risks of screening (5.5%, 23/419). Despite prompting, most women could only think of the potential radiation risk and transient procedure related pain and discomfort. The survey data found 99.2% (379/382) were not worried by the possibly health risks associated with having a mammogram.

Almost two thirds of women (61.6%, 261/424, CI 56.8 to 66.0%) said they would forget to attend screening without an invitation with most (74.1% n=321) preferring a reminder letter every three years to prompt them to attend.

'I'm very bad at remembering. if I had a reminder to say go on so and so date I'd be much better at keeping the appointment.' (ID 01, age 70)

Some (25.6%, 102/399) were discouraged from attending because of transport difficulties, (either public transport, parking problems or not wishing to burden family members, 24.7% 104/420).

Within the interviews, several women talked about the generational issue and the embarrassment of being undressed in front of professionals.

'Women of my age are not accustomed to examining themselves..It's not something that we did... now you see they are telling younger women that they should examine themselves regularly for lumps but we weren't ever. I doubt whether many of my friends, or anybody of my age does that. It's just not something that you do, it's a bit indelicate...and just this idea of somebody sort of feeling around your breasts..it's a lot to do with your childhood. You mustn't undress in front of somebody else. You mustn't let somebody else see your body.' (ID 30, age 80)

However, the survey found that privacy (11.8% 51/431) or embarrassment (7.8 % 33/421) were relatively uncommon reasons for not wishing to be screened. Significant differences in these attitudinal responses were found between women with or without a history of breast cancer. Women with a history of cancer were less likely to be discouraged from attending screening because of privacy (P=0.023) or embarrassment (P=0.015)

Preferences for screening organisation

The overwhelming view across both the interview and questionnaire data was that breast screening should be offered to all women indefinitely and regardless of age, health status or fitness (90.1%, 412/457, CI 87.0 to 92.6%). Women did not wish to be exposed to age discrimination (Figure 2). No significant differences preference responses were found between women with or without a history of breast cancer.

'It's like being penalised if you're ill ... it's like saying ... you'll probably pop your clogs or something will happen so we'll not bother calling you.' (ID 36, age 78)

The interviews give greater insight into these areas and emphasised the importance women gave to their right to choose for themselves. They indicated that although they would be willing to discuss the risks and benefits of breast screening with their general practitioner they would not want them to make decisions on their behalf. They wanted increased information to allow them to make an *informed* decision themselves.

The women interviewed were asked about their views (Figure 2) and preferences (Table 4) of several models of screening service for women over 70. Again this confirms their strong preference for unrestricted screening with 42.9% (178/415) indicating their preference for automatic recall extended indefinitely regardless of age or health status. There was no association between functional status or long term health problems and the desire to continue to attend breast screening over 70 years if invited. No association was found between individual preferences and functional status, long term health problems and number of medications taken. Preference for recall options by age are shown in Table 4. The views of older women towards mammographic screening: a qualitative and quantitative study 22 March 2010

There was a trend ($P=0.044$) for women with a history of breast cancer to have a stronger preference for indefinite automatic 3 yearly recall regardless of health status and for GPs to discuss screening and advice, than women without a history of breast cancer.

As indicated in the introduction, automatic recall for breast screening will extend to age 73 years during 2010 in the UK. Almost all the women interviewed (25/26) and questionnaire surveyed (90.4%, 377/417) were unaware of this. Although women were generally positive about this extension, overwhelmingly they questioned what the rationale was for only extending the current system by 3 years and why screening was not routinely offered to all women regardless of age.

'Why 73?...Well you're on the scrap heap ... I think it should be for everybody whatever age, however old, whatever their health.' (ID 07, age 78)

DISCUSSION

This study has identified important issues in relation to mammographic screening in the over 70 year age group. The use of both qualitative and quantitative methods complemented each other by enabling both an in-depth exploration of the views of this older group of women as well as enabling these issues to be tested and quantified on a larger more generalisable population of older women.

There are several limitations to this study. The study purposively included some women with breast cancer in the interviews to draw out themes of importance to women who had personal experience of the disease. Any bias this may have introduced to the interviews will

have been nullified by the larger numeric sampling of the questionnaires, where the incidence of cancer reflected the population norm.

The response rate to the questionnaire was 48%. This questionnaire was distributed via general practitioners to a general population of older women. The study was set up assuming a 40% response rate in order to meet the recruitment target of 400 women to power statistical analysis and this was achieved. Due to the study design, possible differences between responders and non-responders could not be determined. This introduces the possibility of response bias. It is possible that those who thought screening was a good idea responded whilst those who were less enthusiastic may not have responded and are therefore not represented in the findings.

GP Practices were selected to be involved in the study on the basis of their patient population being of mixed social, economic and ethnicity. The questionnaire did not specifically ask the women questions relating to their socio economic status or ethnic groups. However, it is acknowledged this information would have been helpful in providing useful social and ethnic distribution data.

Although, the study aimed to explore the views of women over 70 years, the median age was only 75 years (range 70-95). Our data may under-represent the views of the oldest old, (over 85) where response rates were proportionately lower than expected based on population age distributions. Our sample also had a lower than expected prevalence of women with a previous history of breast cancer although the proportions of women saying they had regularly attended breast screening between 50 and 70 years of age was similar to the UK National BSP acceptance rates.

Due to the absence of a validated, questionnaire specifically exploring views of mammographic screening in older women, a questionnaire was developed based on the interview data, literature, the expertise within the study team and piloting. The questionnaire did not undergo psychometric testing for reliability and validity. However, face and content validity were ensured by piloting in the target group and the qualitative interview based content.

Consistent with previous research (Linsell et al, 2008) breast knowledge and awareness was relatively poor within this study. For example, almost half of the respondents did not know whether the risk of developing breast cancer was higher, lower or the same as younger women. The interviews indicated that only specific breast symptoms such as a lump or tenderness would alert women to seek medical advice. Non-lump symptoms (redness, puckering, change in breast size, nipple discharge) were not viewed as significant. The study also suggests women remain uncertain about eligibility to attend for breast screening after they become 70 years of age. Very few women could recall receiving information about breast screening either when they attended their last breast screening visit (before reaching 70 years) or in the years following. However, the fact that breast screening was established 20 years ago, (extending up to age 65 initially) means that women over the age of 65 at the time (and now therefore 85) will have had no exposure to screening and therefore might account for the lower levels of knowledge in this age group. At present, when women attend for their final invited screening visit they should be given information about the availability of screening by self referral beyond age 70. Less than half of respondents recalled such information being given suggesting that the present system is ineffective.

Most women had not attended screening since becoming 70 and had assumed breast screening was no longer necessary because they they had not received an invitation. However, just over a fifth of women (22.2%) said that they simply 'didn't want bothering' with breast screening at their age. This is supported by the interview data which suggested that there was a group of women who didn't wish to be screened. The interviews indicated that these women presumed that they were no longer at risk of breast cancer when the recall notices for mammogram ceased.

The majority of women (75.6%) felt that breast screening would be beneficial to their health and would continue breast screening if invited. Almost three in four women surveyed (74.1%) indicated a preference for a postal reminder letter every 3 years. Both interview and survey data suggested this was because the women were worried they would forget to request an appointment every three years. A recent study indicates that reminder letters from the family doctor are effective in increasing screening uptake in the 50-69 age group (Kaczorowski et al, 2009).

The concept of informed choice and a strong desire to not be discriminated against age was evident. However, despite strong views about wanting personal choice, there was also an acknowledgement that some women with debilitating and chronic illness might prefer not to be subjected to further procedures. Current research on how co-morbidity and chronic illness affects screening uptake is variable and conflicting, with some evidence for low screening rates in women with functional impairment (Bynum, 2005). However, most women in the current study tended not take into account the influence of co-morbidity and

functional limitations because they wished to avoid ageism, similar to previous findings (Heflin, 2002). Women seemed unaware of the impact of non-breast major illness on life expectancy and thus, the presence of co-morbid illness did not significantly decrease the desire to be invited for future screening.

As Ramirez and colleagues (2008) pointed out in their study evaluating psycho-educational interventions to promote early presentation of patients with breast cancer, it is important that women are not made unnecessarily anxious by these interventions. However, with regard to promoting levels of awareness of the self referral system in women over 70 years, future work evaluating the effectiveness of targeted information is urgently needed as the present system is clearly ineffective.

The International Society for Geriatric Oncology recommends screening be available up to age 75 with individualised decision making beyond this based on patient preference, physiological age and life expectancy, (Wildiers et al, 2007). The planned extension of the NHS BSP upper age limit to 73, will put the UK more in line with this, but steps need to be taken to educate older women about the availability of screening on demand beyond this age, so that they can make an informed choice about whether to continue to attend.

In conclusion, the study indicates a lack of knowledge about breast cancer diagnosis and uncertainty and confusion about eligibility to attend for screening. There may be a need to consider providing up-to-date high quality targeted information regarding breast screening for women over age 70, to enable informed choice about attending for mammographic screening. The study also demonstrates the reluctance of patients to have their general

practitioner acting as a gatekeeper to access to mammography screening. The prevailing view expressed being that that this group of women wanted increased information about the benefits and risks of screening in order to feel able to make their own *informed* decision as to whether or not they would wish to attend. It denoted the importance these women placed on their perceptions of self-worth, of feeling they are still significant in society whatever their age. The study indicates the need for improved delivery and dissemination of information to improve knowledge and awareness of the risks and benefits and the availability of screening. The current system of voluntary self referral does not appear to be appropriate for this age group.

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REFERENCES

All Breast Cancer Report. Cheung S, Greenway N, Lagord C, Williams L, Kearins O, Lawrence G. All Breast Cancer Report. A UK analysis of all symptomatic and screen-detected breast cancers diagnosed in 2006. Produced by West Midlands Cancer Intelligence. October 2009.

Badgwell BD, Giordano SH, Duan ZZ, Fang S, Bedrosian i, Kuerer HM, Singletary E, Hunt KK, Hortobagyi GN, Babiera G (2008). Mammography before diagnosis among women age 80 years and older with breast cancer. *Eur J Cancer Clin Oncol* **26**:2482-2488

Bennett RL, Blanks RG, Moss SM (2009) Evaluation of extension of breast screening to women aged 65-70 in England using screening performance measures. *Br J Cancer* **100**: 043-7.

BASO (2006) NHS Breast Screening Programme and Association of Breast Surgery at the British Association of Surgical Oncology. An audit of screen detected breast cancers for the year of screening April 2005 to March 2006. <http://www.cancerscreening.nhs.uk/breastscreen/publications/baso2005-2006.pdf>

Boynton PM, Greenhalgh T(2004) Selecting, designing, and developing your questionnaire. *Br Med J* **328**: 1312-1315

The views of older women towards mammographic screening: a qualitative and quantitative study 22 March 2010

Bynum JPW, Braunstein JB, Sharkey P, Kathleen H, Wu AW (2005) The influence of health status, age, and race on screening mammography in elderly women. *Arch. Intern. Med* **165**:2083-2088

Department of Health. Cancer Reform Strategy: achieving local implementation-second annual report. December 2009. Produced by COI for The Department of Health

Collins K, Stevens T, Ahmedzai SA. Can Consumer Research Panels form an effective part of the Cancer research Community (2006) *Journal of Clinical Effectiveness Nursing* **9**: 112-118

Diab SG, Elledge RM, Clarke GM. Tumour characteristics and clinical outcome of elderly women with breast cancer (2000) *Journal of the National Cancer Institute* **92**: 550-556

Maheswaran R, Pearson T, Jordan H, Black D. Socioeconomic deprivation, travel distance, location of service, and uptake of breast cancer screenign in North Derbyshire, UK. *J Epidemiol Community Health* 2006; **60**: 208-212

Diab SG, Elledge RM, Clarke GM (2000) Tumour characteristics and clinical outcome of elderly women with breast cancer. *J. Natl. Cancer Inst.* **92**: 550-556

Fletcher SW, Elmore JG (2003). Clinical Practice: mammographic screening for breast cancer. *N Engl J Med* **348**: 1672-1680

The views of older women towards mammographic screening: a qualitative and quantitative study 22 March 2010

Galit W, Green MS, Lital KB (2007) Routine screening mammography in women older than 74 years: a review of the available data. *Maturitas* **57**: 109-19

Gotzsche PC, Hartling O, Nielson M, Brodersen J, Jorgensen KJ (2009) Breast Screening: the facts-or maybe not. *Br Med J* **338**:86

Grunfeld EA , Raminez AJ, Hunter MS, Richards MA (2002) Women's knowledge and beliefs regarding *breast cancer*. *Br J Cancer* **86**: 1373-1378

Heflin MT, Oddone EZ, Pieper CF, Burchett BM, Cohen HJ (2002) The effect of comorbid illness on receipt of cancer screening by older people. *J Am Geriatr S* **50**: 1651-1658

Kaczorowski J, Karwalajtys T, Lohfeld L, Laryea S, Anderson K, Roder S, Sebaldt RJ (2009) Women's views on reminder letters for screening mammography. *Can Fam Physician* **55**: 622-623

Kumar ID, Reed MWR, Wyld L (2004) Breast screening in the older woman. Efficacy and awareness of availability. *Eur J Surg Oncol* **30**:1012

Linsell L, Burgess CC, Ramirez AJ (2008) Breast Cancer awareness among older women. *Br J Cancer* **99**:1221-1225

The views of older women towards mammographic screening: a qualitative and quantitative study 22 March 2010

Mah Z, Bryant H . Age as a factor in breast cancer knowledge, attitudes and screening behaviour (1992). *Can Med Assoc J* **146**: 2167–2174

Maheswaran R, Pearson T, Jordan H, Black D. Socioeconomic deprivation, travel distance, location of service, and uptake of breast cancer screening in North Derbyshire, UK. *J Epidemiol Community Health* 2006; **60**: 208-212

Morrell S, Barratt A, Irwig L, Howard K, Biesheuvel C, Armstrong B (2009) Estimates of over diagnosis of invasive breast cancer associated with screening mammography. *Cancer Cases Control*. DOI 10.1007/s10552-009-9459-z

Office for National Statistics (2005) *Cancer Registration Statistics for England 2005*. Office for National Statistics: London

Ramirez AJ (2009) Promoting early presentation of breast cancer by older women: A preliminary evaluation of one-to-one health professional-delivered intervention. *J Psychosom Res* **67**: 377-387

Ritchie J, Spencer L (2003) Carrying out qualitative analysis. In *Qualitative Research Practice*, Ritchie J, Lewis J (ed) pp 219-62. Sage Publications: London

The views of older women towards mammographic screening: a qualitative and quantitative study 22 March 2010

Schonberg MA, Silliman RA, Marcantonio ER (2009) Weighing the Benefits and Burdens of Mammography Screening Among Women Age 80 Years or Older. *Am J Clin Oncol* **27**:1774-1780

Siapush M, Singh G (2002) Sociodemographic variations in breast cancer screening behaviour among Australian women: Results from the 1995 national health survey. *Preventative Medicine* **35**: 174-180

Tabar L, Yen MF, Vitak B, Chen THH, Smith RA, Duffy SW (2003) Mammography service screening and mortality in breast cancer patients: 20-year follow-up before and after introduction of screening. *Lancet* **361**:1405-1410

Wildiers H, Kunkler I, Biganzoli L, Fracheboud J, Vlastos G, Bernard-Marty C, Hurria A, Extermann M, Girre V, Brain E. Management of breast cancer in elderly individuals: recommendations of the International Society of Geriatric Oncology (2007). *Lancet Oncol* **8**: 1101-1115

Wyld L, Garg DK, Brown H, Reed MWR (2004) Stage and treatment variation with age in postmenopausal women with breast cancer: compliance with guidelines. *Br J Cancer* **90**:1486-91

The views of older women towards mammographic screening: a qualitative and quantitative study 22 March 2010

Table 1: Characteristics of Respondents

| Characteristic | | Sample | | Population | |
|--|--------------------|--------|------|------------|------------------------------|
| | | n | % | % | Data Source |
| Patient age group (years) | <i>70-74</i> | 200 | 43% | 30% | ONS 2007 ¹ |
| | <i>75-79</i> | 134 | 29% | 27% | |
| | <i>80-84</i> | 71 | 15% | 21% | |
| | <i>85+</i> | 60 | 13% | 22% | |
| | <i>Total</i> | 465 | 100% | 100% | |
| Lives alone | <i>No</i> | 275 | 58% | | |
| | <i>Yes</i> | 202 | 42% | | |
| | <i>Total</i> | 477 | 100% | | |
| Functional status | <i>Independent</i> | 359 | 76% | | |
| | <i>Dependent</i> | 112 | 24% | | |
| | <i>Total</i> | 471 | 100% | | |
| Any long term health problem | <i>No</i> | 59 | 12% | | |
| | <i>Yes</i> | 420 | 88% | | |
| | <i>Total</i> | 479 | 100% | | |
| Any tablets or medicines taken regularly | <i>No</i> | 53 | 11% | | |
| | <i>Yes</i> | 426 | 89% | | |
| | <i>Total</i> | 479 | 100% | | |
| Previously had breast cancer | <i>No</i> | 434 | 95% | | |
| | <i>Yes</i> | 23 | 5% | 12% | Can Res UK 2008 ² |
| | <i>Total</i> | 457 | 100% | | |
| Any relatives had breast cancer | <i>No</i> | 333 | 77% | | |
| | <i>Yes</i> | 97 | 23% | | |
| | <i>Total</i> | 430 | 100% | | |
| Do you examine your breasts | <i>No</i> | 129 | 27% | | |
| | <i>Yes</i> | 349 | 73% | | |
| | <i>Total</i> | 478 | 100% | | |
| Attended breast screening regularly between 50 and 70 years of age | <i>No</i> | 121 | 27% | | |
| | <i>Yes</i> | 328 | 73% | 73% | NHS BSP 2007/8 ³ |
| | <i>Total</i> | 449 | 100% | | |

1. ONS Mid-2007 Population Estimates: England; estimated resident population by single year of age and sex.

2. Cancer Research UK. Approximately 12% of the UK female population aged 65 or more have had a diagnosis of breast cancer. Source: <http://info.cancerresearchuk.org/cancerstats/types/breast/incidence/#prev>

3. NHS Breast Screening Programme Annual Review 2009. Breast screening acceptance rates in 2007/8 for women aged 50 to 70.

Figure 1. Bar chart showing questionnaire responses relating to attitudes to screening.

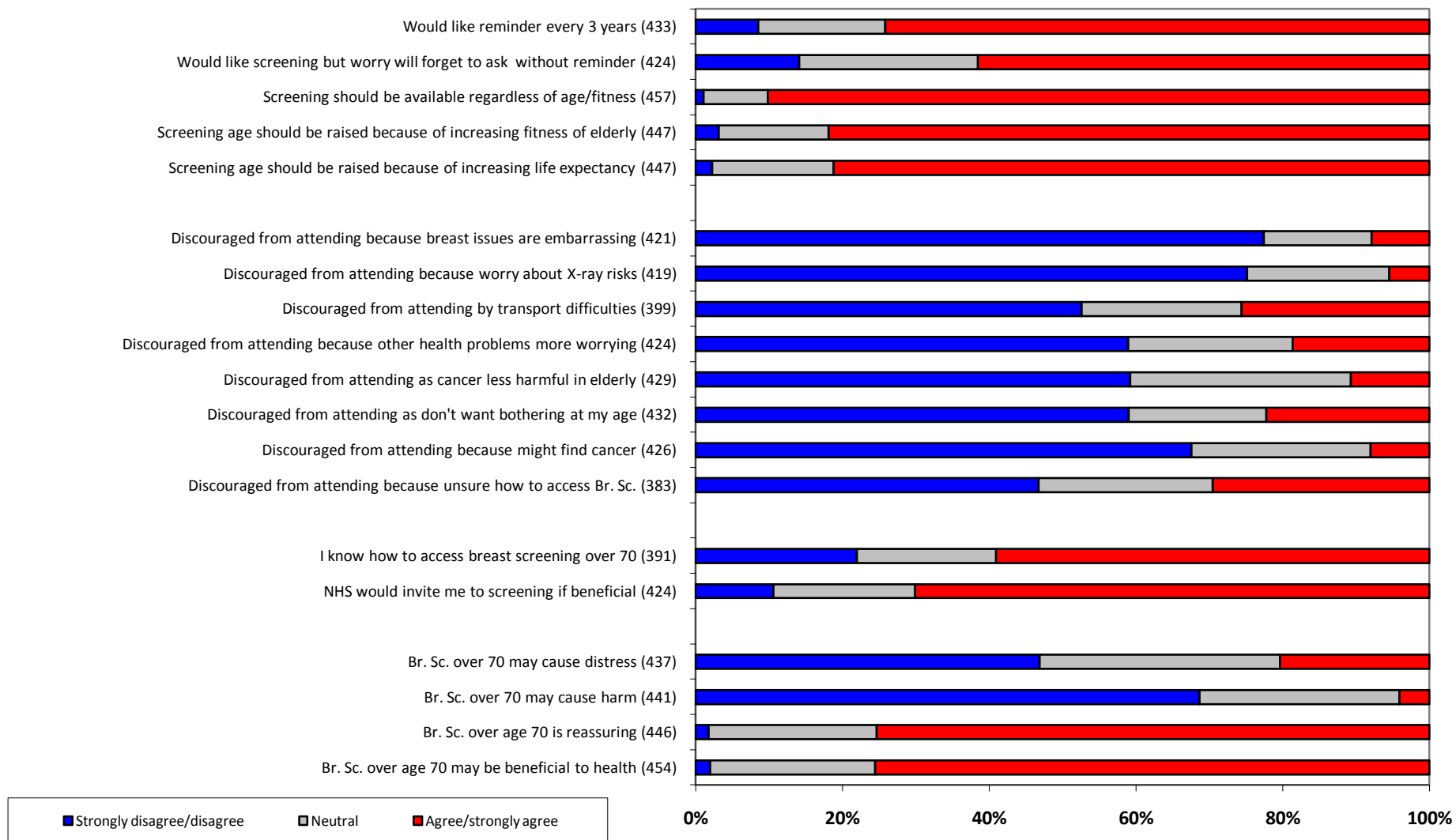


Table 2: Past and current breast screening attendance by age cohort.

| | | Patient age group (years) | | | | | | | | Total | |
|--|----------|---------------------------|----------|-------|----------|-------|----------|-----|----------|-------|----------|
| | | 70-74 | | 75-79 | | 80-84 | | 85+ | | n | % |
| | | n | % | n | % | n | % | n | % | | |
| Attended breast screening regularly between 50 and 70 years of age | No | 11 | (5.6%) | 15 | (12.4%) | 42 | (66.7%) | 49 | (87.5%) | 117 | (26.8%) |
| | Yes | 186 | (94.4%) | 106 | (87.6%) | 21 | (33.3%) | 7 | (12.5%) | 320 | (73.2%) |
| | Total | 197 | (100.0%) | 121 | (100.0%) | 63 | (100.0%) | 56 | (100.0%) | 437 | (100.0%) |
| Never attended for breast screening | Attended | 198 | (99.0%) | 132 | (98.5%) | 46 | (64.8%) | 21 | (35.0%) | 397 | (85.4%) |
| | Never | 2 | (1.0%) | 2 | (1.5%) | 25 | (35.2%) | 39 | (65.0%) | 68 | (14.6%) |
| | Total | 200 | (100.0%) | 134 | (100.0%) | 71 | (100.0%) | 60 | (100.0%) | 465 | (100.0%) |
| Attended breast screening since aged 70 because I asked to attend myself | No | 153 | (79.3%) | 96 | (77.4%) | 61 | (92.4%) | 53 | (98.1%) | 363 | (83.1%) |
| | Yes | 40 | (20.7%) | 28 | (22.6%) | 5 | (7.6%) | 1 | (1.9%) | 74 | (16.9%) |
| | Total | 193 | (100.0%) | 124 | (100.0%) | 66 | (100.0%) | 54 | (100.0%) | 437 | (100.0%) |
| Health care professional advised me to attend breast screening since becoming 70 | No | 176 | (95.1%) | 113 | (94.2%) | 64 | (97.0%) | 52 | (94.5%) | 405 | (95.1%) |
| | Yes | 9 | (4.9%) | 7 | (5.8%) | 2 | (3.0%) | 3 | (5.5%) | 21 | (4.9%) |
| | Total | 185 | (100.0%) | 120 | (100.0%) | 66 | (100.0%) | 55 | (100.0%) | 426 | (100.0%) |
| If attended breast screening were you called back for further tests? | No | 164 | (83.2%) | 113 | (87.6%) | 63 | (92.6%) | 51 | (89.5%) | 391 | (86.7%) |
| | Yes | 33 | (16.8%) | 16 | (12.4%) | 5 | (7.4%) | 6 | (10.5%) | 60 | (13.3%) |
| | Total | 197 | (100.0%) | 129 | (100.0%) | 68 | (100.0%) | 57 | (100.0%) | 451 | (100.0%) |

Figure 2. Older women's views about breast screening in the over 70s

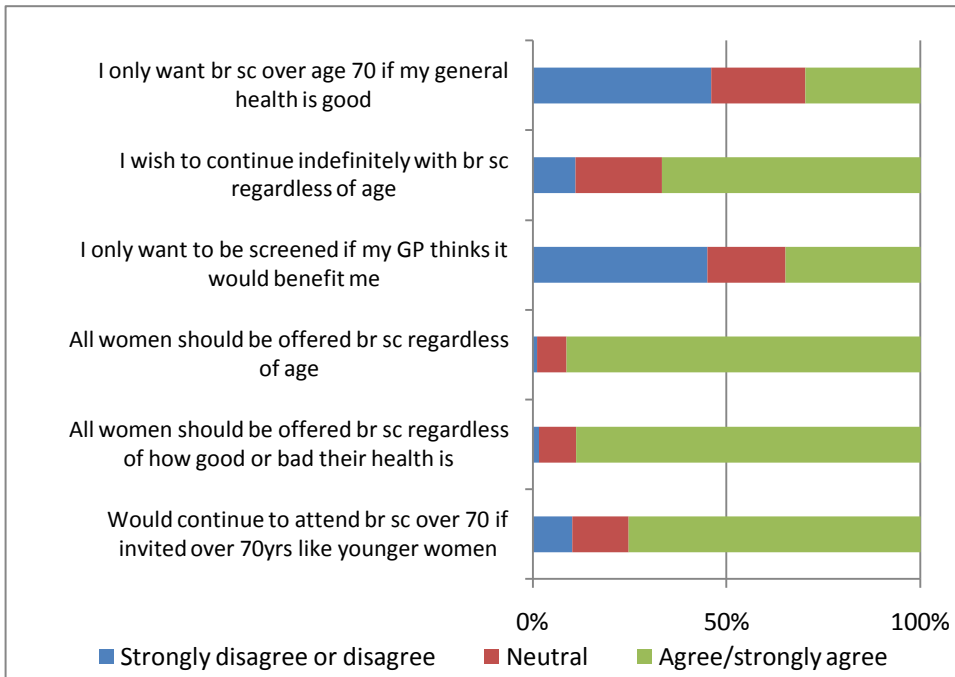


Table 3: Reasons for screening non-attendance in the over 70s

| Reasons given for non attendance to breast screening>70 | <i>n</i> (%) |
|---|---------------------|
| Not invited for screening so thought not necessary (n=382) | 199 (52.1) |
| Did not know I could refer myself (n=382) | 134 (35.1) |
| Felt mammograms not needed at my age (n=382) | 72 (18.8) |
| Other health problems seem more important (n=383) | 66 (17.2) |
| I did not want any more mammograms (n=382) | 47 (12.3) |
| I forgot about it (n=382) | 35 (9.2) |
| Mammograms painful/unpleasant (n=382) | 17 (4.5) |
| Worried about getting to screening centre (n=382) | 15 (3.9) |
| Worried about the risks of having mammograms (n=382) | 3 (0.8) |

Table 4: Preference for different models proposed

| Preference for breast screening service | Patient age group (years) | | | | | | | | Total n % | |
|---|---------------------------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|--------------|-----------------|
| | 70-74 | | 75-79 | | 80-84 | | 85+ | | | |
| | n | % | n | % | n | % | n | % | | |
| Maintenance of the current system, where women over 70 are not called back routinely but can request screening themselves | 10 | (6.1%) | 24 | (25.3%) | 12 | (24.5%) | 6 | (17.6%) | 52 | (15.2%) |
| Automatic 3 yearly call-back letters inviting women for screening to be extended up to age 75, regardless of general health | 34 | (20.6%) | 8 | (8.4%) | 4 | (8.2%) | 1 | (2.9%) | 47 | (13.7%) |
| Selected call-back for fitter women only, after age 70, depending on whether they have other illnesses and therefore might not benefit from screening | 3 | (1.8%) | 4 | (4.2%) | 2 | (4.1%) | 2 | (5.9%) | 11 | (3.2%) |
| Automatic 3 yearly call-back letters, inviting women for screening, to be extended indefinitely, regardless of health status | 99 | (60.0%) | 50 | (52.6%) | 16 | (32.7%) | 10 | (29.4%) | 175 | (51.0%) |
| GPs to discuss screening with older women at their health check and advise whether to continue to attend for breast screening | 19 | (11.5%) | 9 | (9.5%) | 15 | (30.6%) | 15 | (44.1%) | 58 | (16.9%) |
| Total | 165 | (100.0%) | 95 | (100.0%) | 49 | (100.0%) | 34 | (100.0%) | 343 | (100.0%) |

