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

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Purpose: Breast cancer mortality has fallen over the last 30 years partly due to mammographic screening. This improved survival has not been seen in older women. In the UK, breast screening is by automated recall for all women aged 50−69 years. Once over 70, screening is available by self referral only and uptake rates are low. This study examined the views of women >70 to breast screening.

Methods: Women >70 yrs were interviewed about mammographic screening. Interviews were transcribed and analysed using framework analysis. The findings informed the development of a postal questionnaire (sent to 1000 women >70 yrs) to quantify their views.

Results: 26 women over age 70 (median age of 75; range 70−90) were interviewed and a 64 item questionnaire designed to quantify opinion. The response rate to the questionnaire survey was 48.3% (479/992). The median age of responders was 75 (range 70−95) years; 23/457 (5%) had previously had breast cancer; 69/479 (14%) had never attended breast screening; 119/478 (27%) reported never examining their breasts. Just over half (52.9% (241/456), 95% Confidence Interval, CI 48.3 to 57.4%) of respondents said they were unaware that they could request mammographic screening and most were unaware of how to arrange this. Most (81.5% (383/470), CI 77.8 to 84.8%) had not attended breast screening since passing 70 yrs either because they had assumed breast screening was unnecessary (52.1%) or they had not been invitated to attend (35.1%). Women presumed that they were no longer at risk of breast cancer when the recall notices for screening ceased. Most women (75.6% (343/454), CI 71.4 to 79.3%) felt that breast screening was beneficial and would attend if invited. However. 61.6% (261/424, CI 56.8 to 66%) said they would forget to attend without invitation. 90.1% (412/457, CI 87.0 to 92.6%) felt breast screening should be offered to all women regardless of age or health.

Conclusions: The study indicates a lack of knowledge about breast cancer screening in women >70 yrs. The majority felt that breast screening should be extended to the older age group and offered to all women regardless of age or health. The desire not to be exposed to age discrimination was strongly expressed. The study highlights a need to consider whether the current, under-utilised system of voluntary self referral is appropriate for this age group.

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Mass spectrometry based serum protein profiling for the early detection of breast cancer; taking the steps towards clinical implementation

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Background: Detection of breast cancer at early stage can increase a patient's five-year disease-free survival rate. Mammography is currently the gold standard for screening purposes. A specific and more sensitive alternative to the mammography could be the use of proteomic biomarkers. By comparing the protein patterns in serum of patients with breast cancer with those controls, the differential proteins that are most discriminating can be identified. A previous analysis in our centre with serum samples from breast cancer patients and controls resulted in a recognition rate (RR) of 86% sensitivity of 88% and specificity of 84%.

Results of the "Competition on Clinical Mass Spectrometry Based Proteomic Diagnosis" show consistent results of minimal 80%, meaning that this profile is discriminating independently of the chosen statistics (www.bepress.com/sagmb/vol7/iss2). The next step was to validate these results in a new group.

Methods: Serum samples were obtained from 111 breast cancer patients and 205 controls using a standardized collection and processing protocol. MALDI-TOF protein profiles were generated after automated fractionation and spotting (96-chanal pipetting robot, Hamiltonrobotics). The spectra generated using "WCX magnetic beads" assisted mass spectrometry (Ultraflex) were smoothed, binned and normalized after baseline correction. Linear discriminant analysis with double cross-validation, based on principal component analysis, was used to classify the protein profiles.

Results: This new analysis show a comparable discriminating profile for breast cancer, resulting in a RR of 86%, sensitivity of 83% and specificity of 88%. All 6 patients with a BRCA mutation were correctly classified as malignant. Detailed analysis of specified patient subgroups is currently in progress.

Conclusions: These relatively high discriminating results indicate the potential applicability of serum protein profiles for the early detection of breast cancer. This profile can discriminate independently of the chosen statistics and is repeatable in a refined WCX-protocol. It is suitable for high-throughput analysis, essential for use in the clinical setting. All patients with a genetic predisposition were correctly classified, indicating a potential use for patients who will benefit the most from an improved screening method. For a next step it is essential to validate the described procedure in patients at risk for breast cancer and in a population screening setting.

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Two years of mammography screening program in Eastern Thuringia − effects on tumour stages and operational options in two certified breast centers

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Background: The Mammography Screening Program (MSP) was established in Germany according to the European guidelines. In Eastern Thuringia the screening program was started in May 2007. We studied the differences in tumor stage and surgical options on patients diagnosed with breast cancer by the screening program and patients who had been diagnosed otherwise. Furthermore, we analyzed how the MSP influences the total number of breast cancer patients with a special view to the tumor stage and the type of operation performed.

Materials and Methods: The study included data from both east Thuringian Breast Cancer Centers in the cities of Jena and Gera. The data were separated into the periods from May 2006 to April 2007 (407 patients), from May 2007 to April 2008 (588 patients) and from May 2008 to April 2009 (623 patients). We compared tumor stage, possibility of breast conserving surgery and the need of axillary dissection in patients with breast cancer diagnosed before the MSP started and in patients diagnosed by the MSP (334).

Results: In the MSP-diagnosed patients we found not only a higher number of DCIS (15.3% vs. 7.6%), but also an increased number of carcinoma smaller than 2.0 cm (65.6% vs. 50.4%). Carcinoma larger than 2.0 cm occurred in a significantly lower percentage of 15.6% as compared to 31.9% in pre-MSP patients. Appropriate were the results in nodal negativ status, 67.7% of MSP-diagnosed patients in comparison with 62.65% in pre MSP-patients. Breast conserving surgery was performed in 90.7% of the MSP-patients but only in 71.2% of other patients. After the MSP was established, the rate of sentinel lymph node biopsy without axillary dissection rose from 36.4% to 67.7%. In the period from May 2008 to April 2009, the percentage of patients presenting with carcinoma of less than 2.0 cm went up by 8% in comparison to the period from May 2006 and April 2007, $p = 0.007$. Accordingly, the number of carcinoma larger than 2.0 cm declined in the same time, $p = 0.001$. The quota of breast conserving surgery could be increased by 4% in all patients.

Conclusions: Taking part at the Mammography Screening Program leads to the diagnosis of smaller carcinoma and more node-negative cancers. Therefore, more operational options are left. Therapeutical side effects can be minimized.

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Uptake of mammography screening in women aged over 75

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Background: Breast cancer screening programs have simple rules and sharp boundaries.

In France the age range for organized screening of breast cancer is 50−74 (on every other year). A layperson may have difficulty understanding why the public health message focuses on a specific age range.

These boundaries are controversial, particularly with regard to screening for women in their forties and later in life. For example, why should a woman aged 74 years 11 months and 30 days be concerned by screening and then no longer be concerned a day later? This is an inherent defect of threshold-based decisions.

Utility curves for breast cancer screening according to age are clearly not straight (rectangular). The individual limits of when to start and when to stop screening are fuzzy and overlap the collective limits. Not surprisingly some women do not strictly adhere to the prescribed French standard of 50−74 years. However, the actual benefit of breast cancer screening by mammography for women aged over 75 is not yet known.

Materials and Methods: The population-based EDIFICE survey was carried out by telephone from December 12th 2007 to January 7th 2008, in order to reach a representative sample of 1504 subjects living in France and aged between 40 and 85 years. Among the 226 women aged over 75, 188 had no personal history of cancer (any location).

Results: Out of 148 women aged over 75, without breast cancer and having previously undergone mammography at least once before, 16 could not remember the date of the last mammogram and 72 (49%) had undergone a mammogram test when aged over 75. Among these women, 60% planned to be screened in the future.

No socio-demographic differences were observed between screened and unscreened women with regard to: educational level, income, health risk behaviours (smoking, alcohol), being knowledgeable about the value and the process of screening, or psychological features.

Only three factors were statistically associated with a higher rate of attendance: screening initiated by a physician, women having consulted a gynecologist within the past 12 months and women having already undergone at least five mammographies. Only this latter factor was significant in a multiregression analysis (OR = 3.3; $CI_{95\%}$ 1.03–11.1).

Discussion and Conclusion: To accurately determine the utility of screening women aged over 75, an individual assessment is presumably required due to the high variability in the state of health of elderly people, with life expectancy and competitive pathology being critical relevant factors.

In France, there are currently more than 1,000,000 women aged 75−80 years old and the mean cost of a screening test is 70 Euros. Thus, more than 5 to 10 M Euros per year is currently spent for screening these women aged over 75, the utility of which remains debatable.

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The usefulness of screening FDG-PET for breast cancer

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Purpose: The aim is to evaluate the efficacy of whole-body fluorine-18-fluorodeoxyglucose (FDG) positron emission tomography (PET) in screening breast cancer involved the breast and axillary regions.

Methods: 72 women with palpable breast tumor underwent PET scan for clinical diagnose and 8 women with positive uptake in screening whole body PET scan. Uptake PET breast lesions were evaluated by confirmatory standard staging studies, patients underwent computed tomography (CT), MRI, x-ray (XR), or pathology.

Results: Of the 76 positive lesions, 66 (86.8%) were true positive (TP) for neoplastic disease, and 10 (13.2%) were false positive (FP) for non-neoplastic disease (mastopathy etc.). Of 4 PET negative lesions, 4 (100%) were true negative for non-neoplastic disease. The sensitivity, specificity and accuracy for palpable breast mass were 100%, 44% and 93%, respectively. In contrast, those for the detection of metastatic axillary lymph node were 56%, 97% and 82%, respectively. The SUVmax value of TP cases was significant high than FP cases. Furthermore, the SUVmax value was also significant high in cases with the histology of a solid-tubular ductal carcinoma and/or Her2 strong 3+ expression.

Conclusions: Whole-body FDG-PET indicated high sensitivity for palpable disease including primary breast cancer, but showed lower sensitivity in metastatic axillary lymph node. The application of PET scan may improve the detection of breast cancer and may be helpful in evaluation of axillary nodal staging.

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Survey on a pilot mammographic screening programme in Istanbul, Turkey

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Background: Breast cancer diagnosed in Turkey presents at more advanced stages and is associated with a higher mortality rate due to the lack of organized comprehensive mammographic screening. The aim of this study is to evaluate the feasibility of initiating a breast cancer screening program in a major Turkish city by investigating the factors associated with the likelihood for obtaining mammography among healthy women in Bahcesehir county, a region of Istanbul.

Material and Methods: In this cross-sectional survey, 659 healthy women between ages 40 and 69 years were surveyed. All women denied specific breast complaints, had no prior history of a breast biopsy and had no personal history of breast cancer. The multiple-choice questionnaire ascertained information regarding patient demographics, family history of cancer, and patient knowledge regarding breast cancer and the uses of screening. Statistical analyses were performed using the SPSS 15.0 program.

Results: Among the 659 women, 274 (41.6%) had undergone mammography within the last 2 years. Factors associated with increased likelihood of obtaining a mammogram by logistic regression included age older than 50 (OR = 1.75; %95 CI = 1.23–2.49), higher educational level (high school or university graduate; OR = 1.55; %95 CI = 1.07–2.25), and undergoing periodic gynecologic exam (OR = 5.53; %95 CI = 3.88–7.89). In subgroup analysis stratified by age, women between ages 40 and 49 who underwent mammography within the last 2 years were more likely to have higher educational level (OR = 1.94; %95 CI = 1.14–3.31), to undergo periodic gynecologic exam (OR = 4.06; %95 CI = 2.53–6.51), and in addition were more likely to have a 1st or 2nd degree family history of breast cancer (OR = 2.2; %95 CI= 1.06–4.50). By contrast, women between 50 and 69 years old were more likely to have undergone mammography within the last 2 years if they undergo periodic gynecologic exams (OR= 8.63; 5.04–14.77). However, educational level and family history were not found to be significant predictors of mammographic usage in this older age group.

Conclusions: Currently, population-based breast cancer screening in Istanbul would be most successful among women with higher education who undergo periodic gynecologic exams and among younger women who also have a family history of breast cancer. To develop a successful population-based breast screening program in urban regions of Turkey, women of lower educational level and those who do not undergo routine wellness visits with their gynecologist will need to be specifically targeted for educational outreach in order to achieve broad screening compliance within the population.

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**N Cabioglu and V Ozmen equally contributed to the study.*