Breast cancer among women over 75 years: an important public health problem?

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Women aged >75 years are not invited for mammographic screening; if diagnosed with breast cancer, due to their anticipated short-life expectancy, they are expected to die of other causes. To describe the breast cancer health problem in women aged >75 years, we estimated breast cancer among this age group and the risk of breast cancer death in patients diagnosed after 75 years of age in Nijmegen, the Netherlands. Our findings demonstrate that in this age group, 3.3% of the women will be diagnosed with breast cancer, and that one in three of these incident cases die of this disease. These patients could have benefited from continued screening.

Introduction

Women aged >75 years are currently not invited to partake in the European breast cancer service screening programmes.1 The major argument against screening this age group is that these women have a short life expectancy and are more likely to have multi-morbidity compared with younger women. Therefore, even if elderly women are diagnosed with breast cancer they might be expected to die of other causes. Due to this potential risk of overdiagnosis, it is currently not deemed worthwhile inviting this age group for screening.2

On the other hand, currently a large number of 75-year-old women still have a favourable life expectancy. A part of this group will be diagnosed with breast cancer and may ultimately die from this disease. These women could have benefited from screening.


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Short Report

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**Methods**

We designed our study within the population of women in Nijmegen, the Netherlands, who were invited for screening and reached the age of 75 years. A registry holds information on all patients with breast cancer in Nijmegen, through a link with the nationwide network and registry of histopathology and cytopathology (PALGA). Vital status was obtained from the Municipal Personal Records Data Base (GBA) up to and including 2008. Assessments of causes of death were made by a committee of physicians comprising a pathologist, medical oncologist and a radiologist. They were unaware of the screening history. Both our screening and patient data sets are registered with the Netherlands Data Protection Authority. Our registry does not contain data on comorbidity.

We included all women who had been invited for screening and who had reached the age of 75 between 1975 and 2008; there were no women in our study population who had been invited after that age. From the age of 75 years onwards, we collected data on breast cancer occurrence, vital status and breast cancer death. Thus, the burden of breast cancer calculated from our study population is based on clinically diagnosed patients.

We used Kaplan–Meier survival curves to estimate the life expectancy (median survival) starting from the age of 75 years. We censored on migration or end of study, i.e. 31 December 2008. In addition, we estimated breast cancer incidence for women aged 75 years onwards. We calculated the risk of dying from breast cancer within 10 years following diagnosis using the Kaplan–Meier method.

**Results**

In total, 15,508 women matched our inclusion criteria. The median survival, starting at age 75 years, among the women in this group was 10.0 years (95% confidence interval (CI) 9.9–10.2, table 1), 25% of them lived <5.6 years (95% CI 5.4–5.7) and another 25% lived >14.8 years (95% CI 14.6–15.0).

In our study population, 341 women were diagnosed with breast cancer after reaching the age of 75 years (table 1). The incidence rate of breast cancer was 330/100,000 women-years. Within 10 years after diagnosis (95% CI = 24.1–37.2%).

**Discussion**

The major argument against screening after 75 years of age is that these women have a shorter life expectancy and are more likely to have comorbidities than younger women. Therefore, even if elderly women are diagnosed with breast cancer they might be expected to die from other causes. We show that in the group of women previously invited to screening, the incidence of breast cancer after 75 years of age is 330/100,000 women-years. Given the median life expectancy of 10 years, ~3.3% of this population are likely to develop breast cancer between the age of 75 and 85 years. These incident patients sustain a 30% risk of dying from this disease. Our findings emphasize the importance of the health problem caused by breast cancer in elderly women and the potential relevance of continued screening this age group.

There is limited evidence for the effectiveness of screening the total female population after 75 years of age; women in this age group were not included in the randomized screening trials. Data from the Swedish Two-County Trial showed a 32% [relative risk (RR) = 0.68, 95% CI = 0.51–0.89] reduction in breast cancer mortality due to screening in the age group 65–74. An evaluation from the Swedish service screening programme reported a 24% (RR = 0.76, 95% CI = 0.57–1.19) breast cancer mortality reduction due to screening in women aged 70–74 years. As far as we know, the only European study that examined the effect of service screening without an upper age limit showed a 44% (RR = 0.56, 95% CI = 0.28–1.13) breast cancer mortality in women aged >65 years who participate in screening.

However, screening does result in the diagnosis of earlier stage breast cancer, yielding the possibility of breast conservation treatment. This, in comparison with mastectomy, is associated with better quality of life. Therefore, we expect that early detection in combination with less aggressive treatment may improve the quality of life of elderly breast cancer patients.

Compared with the level of the population, individual characteristics, such as multimorbidity or functional status, may strongly influence the likelihood of receiving benefit or harm from screening. Modelling studies have shown that screening may be beneficial up to at least 85 years of age in healthy women with life expectancies >5 years. That is why the American Cancer Society has a preference for individualized screening rather than stopping at a certain age. This organization suggests no upper age limit, but advises screening as long as the woman is healthy. In Europe, screening is centrally organized with personal invitations up to 70 or 75 years of age on a population-based level.

In the UK, women can continue to be screened after reaching the upper age limit by requesting an individual screening examination (self-referral). We expect that in a system of self-referral to screening, healthy elderly women will actively choose to continue participating in screening and that these women may benefit from early breast cancer detection.

A limitation of our study is that it describes a period of >30 years in which treatment of breast cancer has improved. This may have favourably influenced breast cancer survival overtime between 1975 and 2008. On the other hand, breast cancer incidence in elderly women has increased strongly in the Netherlands. For example, in 1989, the incidence in the age group 80–94 years was 332/100,000 women and this increased to 386/100,000 women in 2009. Despite the possible improved survival of breast cancer patients, the rise in incidence indicates that nowadays breast cancer is still a health problem in elderly women. Due to limited data available, we were not able to stratify our results with respect to calendar period of death.

In conclusion, we report that 3.3% of the women aged 75–85 years will be diagnosed with breast cancer, and that one in three of these incident cases will die from this disease. Our findings emphasize the importance of the health problem caused by breast cancer in elderly women. Our numbers alone do not justify an extension of the upper limit of screening after 75 years of age. However, due to ageing of the European population, the contingent of healthy elderly women will further increase in the upcoming decades. If permitted, we expect that this group will actively choose to continue participating in screening. A solution for this age group would be to introduce and communicate a system where women can continue to be screened after reaching the upper age limit by requesting an individual screening examination.

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**Table 1 Longevity and the burden of breast cancer in women (n = 15,508) aged ≥ 75 years**

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Women aged ≥ 75 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survival</td>
<td></td>
</tr>
<tr>
<td>Lower quartile (95% CI), (years)</td>
<td>5.6 (5.4–5.7)</td>
</tr>
<tr>
<td>Median (95% CI) (years)</td>
<td>10.0 (9.9–10.2)</td>
</tr>
<tr>
<td>Upper quartile (95% CI), (years)</td>
<td>14.8 (14.6–15.0)</td>
</tr>
<tr>
<td>Number of breast cancer (person-years)</td>
<td>341 (103,374)</td>
</tr>
<tr>
<td>Breast cancer incidence per 100,000 person-years</td>
<td>330</td>
</tr>
<tr>
<td>Number of deceased</td>
<td>223</td>
</tr>
<tr>
<td>Number of died of breast cancer</td>
<td>73</td>
</tr>
<tr>
<td>10-year risk on breast cancer death (%)</td>
<td>30.1 (24.1–37.2)</td>
</tr>
</tbody>
</table>
Towards a sustainable healthy working life: associations between chronological age, functional age and work outcomes

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Background: The aims of this study were: (i) to determine the relation between chronological and functional age; (ii) to examine the association between chronological age and work outcomes; and (iii) to examine the association between functional age and work outcomes. An overview of the most reported work outcomes is outlined. Methods: Chronological age refers to the calendar age; functional age was measured with perceived health status (SF-36) and the presence of a chronic health condition. Perspectives on experienced problems, barriers, facilitators and support needs due to ageing and the Work Ability Index were gathered out as work outcomes. Results: The association of chronological and functional age of workers aged >45 years (n=2971) in the study outcomes were significant but small, except for the presence of a chronic health condition. The presence of a chronic health condition was not related to chronological age. Older workers (60–64 years) reported better scores on social functioning, mental health and vitality compared with workers aged 45–59 years. Most reported problems due to ageing were energy decline, muscle function decline, concentration lapses and memory deterioration. Experienced barriers were concentration, work pace problems and mobility; facilitators were support from colleagues, informal relations at work and supervisors. Individual agreement had to be met to continue working life. Conclusions: This study confirmed that both chronological and functional age were associated with a decrease in work outcomes. Workers >60 years did not experience more problems and barriers compared with workers between 45 and 49 years of age.

Introduction

The growing proportion of older people in the labour force stresses the need to promote a healthy working life cycle.1–3 Ageing is not simply an effect of time4–6 but refers to many changes in biological, psychosocial and social functioning over time,4–7 and therefore has an effect on the personal, organizational and societal levels. De Lange et al.8 highlighted this complex operationalization of ageing in the workplace, and they referred to the approaches suggested by Sterns and Doverspike9 to conceptualize age. Five different approaches to ageing were distinguished: chronological age, functional or performance-based age, psychosocial or subjective age, organizational age and the life span concept of age to conceptualize ageing at work. The authors emphasized the need to pay attention to these different types of ageing and their influence on work outcomes.