Is there evidence of age bias in breast cancer health professionals' treatment of older patients?

Article  (Published Version)


This version is available from Sussex Research Online: http://sro.sussex.ac.uk/id/eprint/106816/

This document is made available in accordance with publisher policies and may differ from the published version or from the version of record. If you wish to cite this item you are advised to consult the publisher’s version. Please see the URL above for details on accessing the published version.

Copyright and reuse:
Sussex Research Online is a digital repository of the research output of the University.

Copyright and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable, the material made available in SRO has been checked for eligibility before being made available.

Copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

http://sro.sussex.ac.uk
Is there evidence of age bias in breast cancer health care professionals’ treatment of older patients?

Daisy Neala, *, Jenna L. Morganb, Ross Kennyc, Thomas Ormerod d, Malcolm WR. Reeda

a Brighton and Sussex Medical School. Brighton, UK
b University of Sheffield Medical School. Sheffield, UK
c Department of Breast Surgery, Surrey and Sussex NHS Trust, UK
d University of Sussex. Brighton, UK

Abstract

Objectives: Despite NICE (2009; 2018) guidelines to treat breast cancer patients ‘irrespective of age’, older women experience differential treatment and worse outcomes beyond that which can be explained by patient health or patient choice. Research has evidenced the prevalence of ageism and identified the role of implicit bias in reflecting and perhaps perpetuating disparities across society, including in healthcare. Yet age bias has rarely been considered as an explanatory factor in poorer outcomes for older breast cancer patients.

Methods: This mixed methods study explored age bias amongst breast cancer HCPs through four components: 1) An implicit associations test (31 HCPs); 2) A treatment recommendations questionnaire (46 HCPs); 3) An attitudes about older patients questionnaire (31 HCPs); 4) A treatment recommendations interview (20 HCPs).

Results: This study showed that breast cancer HCPs held negative implicit associations towards older women; HCPs were less likely to recommend surgery for older patients; some HCPs held assumptions that older patients are more afraid, less willing and able to be involved in decision-making, and are less willing and able to cope with being informed of a poor treatment prognosis; and conditions which disproportionately affect older patients, such as dementia, are not always well understood by breast cancer HCPs.

Conclusions: These results indicate that there are elements of age bias present amongst breast cancer HCPs. The study’s findings of age-based assumptions and a poorer understanding of conditions which disproportionately affect older patients align with patterns of differential treatment towards older breast cancer patients suggesting that age bias may be, at least in part, driving differential treatment.

© 2022 Published by Elsevier Ltd.
There are varied and interacting determinants of disparities in health, such as systematic poverty, barriers to healthy living, and access to education and health care. However, for older patients, disparities in health outcomes persist even when social determinants of health are accounted for, indicating older patients are likely experiencing biased care. Health care professionals (HCPs) appear to hold varied, complex, and contradictory attitudes towards older patients. Research identifies issues that may be linked to negative outcomes. HCPs do not appear to receive adequate training, and may use less willing, to work with older patients. They may regard older patients’ symptoms as an inevitable consequence of old age. They may communicate with less sensitivity, offer more simplified information, or make assumptions about older patients’ preferences and capabilities. There is also evidence that positive communication between health care professionals and patients leads to increased cooperation in medical treatment, higher satisfaction with care, improved health literacy and health outcomes. Implicit associations have also been evidenced amongst health care professionals that reflect, and perhaps perpetuate, healthcare disparities. There is some evidence for a relationship between health care providers’ high implicit bias and the treatments recommended to different patients.

There is a body of research demonstrating that the differential treatment of older women with breast cancer is beyond that which can be explained by patient choice, patient health, and tumour characteristics. Additional studies indicate that clinician preference is an important factor influencing treatment recommendation. There have also been studies indicating that, whilst clinicians deny the influence of age, patient age is a significant influencer of clinician recommendation. This study aimed to extend the area of investigation by examining the role of age bias in health care professionals’ treatment of older breast cancer patients.

2. Methods

2.1. Design

This study adopted a mixed-methods approach to explore the influence of patient age in breast cancer HCPs’ treatment decisions for older patients through four components.

1. An Implicit Associations Test (IAT) was employed to measure participants’ implicit associations towards older and younger women, adapted from the Harvard age IAT. IATs have been used to measure implicit biases towards various social groups. The technique uses time measures in a pair sorting task linking characteristics (e.g., young and old) with descriptions (e.g., good and bad) to assess the strength of automatic associations between target categories and evaluations. People tend to be quicker in pairing commonly held stereotypes (e.g., men with work and women with home), and negative attributes with socially disparate groups (e.g., bad with older faces).

2. A Discrete Choice questionnaire was used to identify changes in treatment recommendation associated with age. The patient scenarios were presented as vignettes, in which respondents view successive patients with varying characteristics to determine how different patient characteristics are prioritized by clinicians when recommending treatments. Study evidenced age as an independent predictor of treatment recommendations for older breast cancer patients. This study used 34 scenarios: 17 scenarios and 17 younger counterparts, to compare treatment recommendations where all else is equal except the patients’ age.

3. A questionnaire on age-related assumptions in breast cancer treatment and opinions around the treatment of older breast cancer patients was used to collect participants’ views on older patients’ preferred decision making involvement, clinical trial involvement, and treatment outcome priorities. It also assessed participants’ views towards treatment toxicities for older patients and treating older patients with dementia, and participants’ perceptions of age bias in breast cancer treatment and clinical guidelines for older patients. These statements were created based on topics identified in the relevant literature with input from breast cancer clinicians.

4. Semi-structured interviews with HCPs were performed to discuss reasoning behind decision making and recommend a primary treatment between surgery or PET for older breast cancer patients. Five patient scenarios were selected from the scenarios in the Discrete Choice questionnaire which had the most divided opinion about treatment recommendations. This offered a more in-depth insight into HCPs’ reasons behind treatment recommendations (the Discrete Choice questionnaire) and assumptions about, or attitudes towards, older breast cancer patients (the age-related statements).

3. Statistical methods

3.1. Implicit associations

A tally was calculated using IATGEN of the average difference (D-score) between the time taken to complete compatible trials compared to incompatible trials (i.e., as a measure of bias where items are paired faster if the concepts are closely related, in this case associating faces of older women with negative or positive attributes). The D-score ranged from −2 to +2, with positive scores representing implicit bias against older women (older female faces + negative words; younger female faces + positive words) and minus scores representing an implicit bias against younger women (younger female faces + positive words; older female faces + negative words).

3.2. Treatment recommendations questionnaire

A binomial logistic model was fitted in IBM SPSS Statistics package (Version 26) to analyse the effects of patient age, alongside other patient characteristics (cancer size, cancer type, comorbidities, and cognition), on the participants’ treatment preference.

3.3. Attitudes towards older patients questionnaire

Likert responses to the statements about older patients were analysed in IBM SPSS Statistics package (Version 26) using descriptive statistics.
3.4. Treatment recommendations interview

Analysis was carried out in NVivo Pro 1.4.1 following the National Centre for Social Research Framework approach [42]. Analysis involved transcription, immersion, coding, emergent themes, and creating a matrix to identify convergent and divergent themes focusing on patient age, age-related assumptions, or proxies for patient age as factors in participants’ decision making. Ten percent of interviews were double coded.

4. Results

Of the respondents who completed demographic information (N = 31) for components 1, 2, and 3, participants were either breast surgeons, oncologists, or breast care nurses.

4.1. Implicit associations

The IAT was completed by 31 breast cancer HCPs, 28 of which showed an ‘anti-old’ implicit association. On average, participants held a statistically significant ‘moderate’ negative implicit association towards older women (M = 0.52, t(29) = 9.38, p < 0.001). This was slightly higher than the background population for the Harvard age IAT (+0.52 vs +0.42), reflecting either 1) differences in sample size, 2) differences in study populations, or 3) more negative associations towards older women (this study’s IAT) compared to older adults (the Harvard Age IAT).

4.2. Treatment recommendations questionnaire

The questionnaire was completed by 45 breast cancer HCPs. A logistic regression found that participants were significantly less likely to recommend surgery to older patients as compared to identical younger patients (Table 1). This was the most pronounced for the oldest patients: compared to patients in their 60s, respondents were three percent less likely to recommend surgery to identical younger patients (Table 1). This was most pronounced for patients in their 70s (65% vs 61.86%) and 26% less likely to recommend surgery to identical patients in their 80s (43.33% vs 25.89%).

4.3. Attitudes towards older patients questionnaire

Thirty-one breast cancer HCPs responded to the statements about older patients. Most participants (90%) felt that assumptions about older patients bias the breast cancer care they receive. Just under half (48%) agreed that assumptions about older patients have likely influenced their own practice at times. Few participants agreed with statements: “older patients are less likely to want to take part in a clinical trial” (10% agreed), “older patients are less likely to want to consider and less able to understand treatment options to older patients” (5% agreed). There was a more even spread of opinion for statements:

“older patients do not want to consider treatments which will likely impact on their quality of daily living” (32% agreed), “older patients are unable to tolerate the toxicities associated with some treatments” (36% agreed), and “surgery should be avoided for patients with lack of capacity due to dementia” (26% agreed).

4.4. Treatment recommendations interview

Twenty breast cancer HCPs from different trusts were interviewed (17 consultant oncoplastic breast surgeons, a breast oncologist, a higher surgical trainee, and a clinical lecturer in breast surgery). The main themes of interest are summarized below.

4.4.1. Patient age

The patients’ older age was never the focus of respondents’ reasoning for recommending treatments, but was often listed alongside other factors, such as comorbidities and tumour biology, as a reason to avoid surgery. There were comments that older age should not limit treatment options. Yet there were instances where older age was a clear consideration for recommending PET, and younger age was a factor for recommending surgery. Some commented that treatment efficacy is less important for older patients but qualified this by stressing the importance of considering the patient as an individual.

4.4.2. Age-related assumptions

There were several instances of age-related assumptions that older patients are less willing to consider and less able to understand treatment options and likely outcomes.
4.4.4. Patient choice

Most HCPs recommended that patients should choose their treatment for patients where they considered there to be little difference between PET and surgery. Patient choice was also recommended for situations where the HCP felt the patient’s tumour and general health meant they should be able to cope with surgery, but the patient’s older age meant they should be able to receive PET if that was their preference. One respondent stated that the practice of offering the patient a choice was a pretence.

### Table 1

Likelihood of patient variables to predict surgery versus other treatments.

<table>
<thead>
<tr>
<th>Patient characteristics</th>
<th>Relative Risk Ratio</th>
<th>Significance</th>
<th>95% confidence interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small, node-</td>
<td>0.01</td>
<td></td>
<td>1.362 5.886</td>
</tr>
<tr>
<td>Small, node+</td>
<td>1.751</td>
<td>.009</td>
<td>1.151 2.664</td>
</tr>
<tr>
<td>Large, node-</td>
<td>0.09</td>
<td></td>
<td>0.465 1.122</td>
</tr>
<tr>
<td>Large, node+</td>
<td>0.722</td>
<td>.148</td>
<td></td>
</tr>
<tr>
<td>Comorbidity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>0.01</td>
<td></td>
<td>0.004 0.026</td>
</tr>
<tr>
<td>Mild</td>
<td>0.161</td>
<td></td>
<td>0.110 0.440</td>
</tr>
<tr>
<td>Moderate</td>
<td>0.337</td>
<td>.001</td>
<td>0.226 0.503</td>
</tr>
<tr>
<td>Severe</td>
<td>0.01</td>
<td></td>
<td>0.001 0.004</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>0.01</td>
<td></td>
<td>0.001 0.001</td>
</tr>
<tr>
<td>Mild</td>
<td>0.355</td>
<td>.001</td>
<td>0.200 0.631</td>
</tr>
<tr>
<td>Moderate</td>
<td>0.020</td>
<td></td>
<td>0.010 0.040</td>
</tr>
<tr>
<td>Severe</td>
<td>0.01</td>
<td></td>
<td>0.010 0.010</td>
</tr>
<tr>
<td>Cancer biology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ER+ , HER2-</td>
<td>0.01</td>
<td></td>
<td>0.001 0.001</td>
</tr>
<tr>
<td>ER- , HER2+</td>
<td>1.351</td>
<td>.376</td>
<td>0.694 2.629</td>
</tr>
<tr>
<td>ER- , HER2-</td>
<td>0.442</td>
<td>.001</td>
<td>0.288 0.677</td>
</tr>
<tr>
<td>Age</td>
<td>0.378</td>
<td>.001</td>
<td>0.264 0.543</td>
</tr>
</tbody>
</table>

* Reference categories.

* Values > 1 indicate health care professionals were more likely to recommend surgery compared to the reference category. Values < 1 indicate health care professionals were less likely to predict surgery compared to the reference category (e.g., health care professionals were 2.8 times more likely to recommend surgery to patients with small, node- tumours as compared to patients with small, node+tumours).

#### Representative quotes for theme: ‘age-related assumptions’

<table>
<thead>
<tr>
<th>Theme</th>
<th>Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afraid</td>
<td>‘We see patients like this in clinic. Because of their age they perceive breast cancer surgery to be something more major.’ Pp3</td>
</tr>
<tr>
<td></td>
<td>‘By the time she needs an operation she’ll be in her 90s […] so might as well get on with it now rather than later when she’s more afraid.’ Pp9</td>
</tr>
<tr>
<td></td>
<td>‘It’s a shame that you probably can’t share it with many of the patients that actually need it because they’re probably demented or maybe they can’t see, they forgot their glasses. […] Many of these patients cannot really recognize what the bar chart is.’ Pp9</td>
</tr>
<tr>
<td></td>
<td>‘I will put it simply because most women want things to be simplified for them, especially at this age.’ Pp16</td>
</tr>
<tr>
<td></td>
<td>‘Patients of this generation, and I’m not going to generalize but, are often a bit data averse. They crave the advice of someone they can implicitly trust.’ Pp12</td>
</tr>
<tr>
<td></td>
<td>‘It’s not nice to show an 83 year old their chances of dying within a year is 80 percent. It’s like when you use the adjuvant! Online isn’t it. We use it in good prognosis tumours, but you don’t show it to the bad prognosis because otherwise they’re going to commit suicide or something.’ Pp9</td>
</tr>
</tbody>
</table>

#### Representative quotes for theme: ‘dementia’

<table>
<thead>
<tr>
<th>Theme</th>
<th>Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well enough to operate</td>
<td>‘She just needs a little bit of a help with cooking and shopping but they’re generally well.’ Pp2</td>
</tr>
<tr>
<td>Not well enough to operate</td>
<td>‘She apparently requires help washing and dressing which suggests that she’s really quite frail’ Pp1</td>
</tr>
<tr>
<td>Unable to make treatment decisions</td>
<td>‘[The patients] have got dementia so it’s not reasonable to give them a choice’. Pp5</td>
</tr>
<tr>
<td>Attempts to gauge and respect decisions</td>
<td>‘Giving her a choice with the dementia I think that you’re fooling around there aren’t you’ Pp9</td>
</tr>
<tr>
<td></td>
<td>‘Even if she doesn’t have full capacity, [if] she had a strong preference that she didn’t like the fact there was a cancer in her breast and we thought that it was reasonable to proceed with surgery […] then I think it’s reasonable to try and do that for her.’ Pp1</td>
</tr>
<tr>
<td></td>
<td>‘If her mental health means she couldn’t be part of a choice, I would ask her family whether she expressed any previous desires [or] wishes. In those circumstances if they’ve lived with you for five years you’ve probably had some careful thoughts about what you felt was in their best interest.’ Pp7</td>
</tr>
<tr>
<td>Deciding for them</td>
<td>‘I think offering a choice is going to be difficult because I’m not sure if she’d retain or understand the choice, so I think endocrine therapy would be my preferred option’. Pp4</td>
</tr>
</tbody>
</table>

4.4.3. Dementia

There was marked variation in how HCPs perceived the patient’s dementia to be progressing. There was no clear consensus on how to explore wishes and decision making for patients with dementia. A dominant opinion for many HCPs was that patients with dementia would be unable to make treatment choices. Some HCPs explored how they would attempt to ascertain and respect the patient’s wishes if they felt the patient did not have capacity to express this clearly (e.g., advanced directives, discussions with the patients’ families). Most did not discuss this and decided the treatment for the patient, most often recommending PET.
5. Discussion

The role of age bias in HCPs’ decision making for the treatment of older breast cancer patients has rarely been considered, yet this study indicates age bias is present.

The implicit bias measure found breast cancer specialists tend to associate older women with negative attributes. Whilst there is wide debate around the use of the IAT as a predictor of behaviour or a diagnostic of bias in individuals, aggregate scores are stable and relate to patterns of disparity across populations [43].

The questionnaire identified instances of age-based assumptions amongst a minority of breast cancer specialists, such as “it takes too long to explain treatment options to older patients” (range 5–10%) and a wide spread of opinion for the less clear cut age-related assumptions, such as “surgery should be avoided for patients with lack of capacity due to dementia” (range 26–32%), which may suggest that interventions to address age bias will also need to take a nuanced approach.

In line with other similar studies [38,39], breast cancer HCPs were less likely to recommend surgery (considered the gold standard treatment for breast cancer) for older patients as compared to identical younger patients; this divergence from clinical guidelines increased with age indicating that age is driving decision making. This study also found that whilst a quarter of HCPs stated that older age should not be used as a proxy for poorer health, the same number of HCPs also listed relatively younger age as an indicator of good health.

This study’s findings hold parallels with [44] findings that some HCPs assumed older patients prioritise quality of life over quantity and steer them towards less effective treatments. Whilst some studies indicate that quality of life is a clear priority for many older patients [45], other research has found that ‘many older patients are willing to accept the toxicity associated with cancer treatment if it increases their chance of survival’ [46], highlighting the importance of informed decision making.

This study found some HCPs assume older patients do not want full information about likely treatment outcomes; research has shown most older breast cancer patients want full information about potential treatments [17] and report a better care experience when they receive more information [15].

In line with stereotypes of older adults as ‘doddering but dear’ [47], this study also found some HCPs assumed that older patients were more afraid and less able to cope with information that gives a poor prognosis, and that older patients were less able to understand treatment options—often accompanied by language which may be considered patronising.

The questionnaire and interviews shed light on how clinicians explain and justify their preferences and these demonstrate clear evidence of awareness that they are making conscious rather than unconscious decisions to recommend non guideline compliant recommendations.

In line with previous studies [44], there was marked variation in how HCPs perceived dementia, their opinions on how this might progress, and consequently which treatment was recommended. There are no guidelines on the role of dementia in decision making for cancer patients, and care varies widely [48]. This study found many HCPs feel patients with dementia are unable to be involved in deciding their cancer treatments, and few HCPs discussed methods to gauge and respect the wishes of patients with dementia. Decision making for dementia patients is complex and should be individualised, yet oncologists are often unsure of how best to communicate with patients with dementia [49–51]. People living with dementia often wish to engage in shared decision making and be involved in treatment decisions but feel overlooked by health care professionals and informal caregivers [32].

5.1. Study limitations

The findings are somewhat limited by sample size, but this is offset by the convergence of findings across this mixed-methods approach and the richness of the qualitative data.

This study focused on the role of age bias amongst HCPs in the treatment of older women with breast cancer but recognises there is a body of literature indicating that the role of age bias amongst older patients is also a worthwhile avenue to explore. There is consistent evidence that many older adults hold their own age bias and that there is a link between self-perceptions of ageing and health outcomes [53–57].

5.2. Clinical implications

This study found age-related assumptions about older patients’ preferences and abilities which may partially explain patterns of differential treatment of older breast cancer patients. Assumptions that older patients are less willing and able to make treatment decisions may steer HCPs away from attempts to engage older patients in decision making. Whilst assumptions that older patients prefer less extensive treatments may steer HCPs towards recommending PET for situations where there are risks and benefits for both PET and surgery. It is likely these age-related assumptions are, in part, driving differential treatment for older breast cancer patients.

5.3. Conclusions

This study concludes that a focus on age bias is a useful lens to consider the treatment differences of older women with breast cancer. In breast cancer cases where patients have severe comorbidities, are frail, or choose an alternative treatment, it is appropriate for clinicians to deviate from the evidence-based guidelines by recommending a treatment even though it may be less effective. However, this research has found that clinician decisions about breast cancer treatments for older women are at least partially driven by age-based assumptions about what older women want or can cope with. A lack of clear guidance on how to define and measure frailty, and limited understanding of cognitive impairments, such as dementia, which disproportionately affect older women also contribute to assumption-driven rather than evidence-based decision making in these cases. Recent efforts to provide
objective, standardised assessments of older breast cancer patients’ health include a fitness assessment screening form which can be used in surgical clinics to identify patients who are likely to be frail and would benefit from a more detailed geriatric assessment to inform and support treatment planning [58]. Overall, this study demonstrates wide variations in the attitudes and assumptions made by HCPs in the treatment of older women with breast cancer, particularly in the presence of cognitive impairment.

Ethical background statement

There are no conflicts of interest with the manuscript to report.

CRediT authorship contribution statement

Daisy Neal: Conceptualization, Methodology, Formal analysis, Investigation, Resources, Data curation, Writing — original draft, Writing — review & editing, Visualization, Project administration. Jenna L Morgan: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Writing — review & editing, Supervision. Ross Kenny: Investigation, Writing — review & editing. Thomas Ormerod: Conceptualization, Formal analysis, Writing — review & editing, Supervision, Funding acquisition. Malcolm WR. Reed: Conceptualization, Validation, Formal analysis, Writing — review & editing, Supervision, Funding acquisition.

Declaration of competing interest

There are no conflicts of interest with the manuscript to report.

Acknowledgement

This work was funded by a PhD grant from Sussex Cancer Fund. Ethical approval granted by the Brighton and Sussex Medical School, Research Governance and Ethics Committee (project reference: ER/BSMSS9DV8/1) and the Sciences & Technology Cross-Schools Research Ethics Committee (project reference: ER/BSMSS9DV8/2).

References