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REVIEW

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Factors influencing older women's decision-making related to treatment of operable breast cancer: A qualitative systematic review

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Abstract

Objective: There is variation in practice in the treatment of older women with breast cancer. International guidelines highlight the importance of patient autonomy in treatment decision-making. The aim of this study is to identify factors which influence decision-making in older women with operable breast cancer, which will enable us to further understand how to support these patients.

Methods: Systematic review in accordance with the PRISMA guidelines was performed to identify factors which influence treatment decision-making in older women with operable breast cancer. Medline, Web of Science and SCOPUS were searched.

Results: The search yielded 5840 results; 13 articles met the inclusion criteria and reported on a total of 1118 women. Thematic analysis identified three key themes in which decision-making factors could be categorised. These were healthcare-related factors, patient-related factors and impact of treatment. Healthcare-related factors included communication with clinicians and provision of information. Patient-related factors were age, pre-existing knowledge, preconceptions of breast cancer and treatment, decision-making style and co-morbidities. The impact of treatment considerations included body image and effect on quality of life. Decision-making style was frequently reported; older women did not demonstrate one preferred style.

Conclusions: The findings have highlighted the complex interplay of factors which influence how older women make breast cancer treatment-decisions. Clinicians should have an awareness of the factors highlighted to maximise their ability to provide support and personalised care to older women with breast cancer whilst treatment decisions are made.

KEYWORDS

breast cancer, cancer, decision-making, older women, oncology, treatment decision-making, treatment options

1 | BACKGROUND

Globally breast cancer is the most common malignancy in females.[1] Incidence increases with age and in the UK around a quarter of cases are diagnosed in those over 75.[2] In recent years there has been growing awareness of the wide variation in practice in the treatment of older women with breast cancer.[3] Notable examples include regional discrepancies the UK regarding the choice of surgical treatment versus primary endocrine therapy (PET) for those with oestrogen receptor (ER) positive tumours or in the offer of adjuvant chemotherapy versus no chemotherapy.[4] Similarly, sentinel node biopsy and adjuvant radiotherapy within in low-risk older women may yield minimal benefit and omission of these treatments may be warranted in patients with favourable tumour biology.[5,6] Older women are therefore faced with a great deal of complexity and nuance in relation to the treatment options presented to them.

Worse breast cancer outcomes are reported in older women compared with their younger counterparts[7] and they are often under-represented in treatment trials.[8] To address this disparity, the National Audit of Breast Cancer in Older People (NABCOP) was commissioned to improve the quality of care for patients in England and Wales. The 2022 NABCOP recommendations highlighted the importance of tailoring treatment on an individual level.[9] Similarly, the 'Bridging the Age Gap' trial aimed to optimise the management of older women with breast cancer in the UK.[4] One branch of this trial appraised the literature to produce 'decision support aids' to assist women in their treatment decisions; this highlighted that there was limited evidence regarding the information needs of older women with breast cancer.[10]

Treatment decision-making requires consideration of the risks and benefits particularly in those with complex co-morbidity who may undergo surgery. The International Society of Geriatric Oncology (SIOG) and the European Society of Breast Cancer Specialists (EUSOMA) recently updated their joint recommendations for management of breast cancer in older women and these advocate decision-making driven by patient preferences[11]. A literature review summarising studies addressing decision-making in older patients, which featured three studies including patients with breast cancer, highlighted the importance of balancing quality versus quantity of life.[12] This balance is of particular concern in older women with breast cancer and warrants further exploration given the invasive nature and morbidity of surgical treatments, which can potentially adversely affect quality of life.[13]

A narrative review exploring healthcare decision-making models in women with breast cancer and concluded that 'shared decision-making' (SDM) was the best approach to maximise patient autonomy.[14] SDM describes the dynamic process of determining the treatment option which is aligned to both patient preferences and medical evidence. The National Institute of Clinical Excellence advocates SDM.[15] Further analysis of decision-making style preferences specifically in older women with breast cancer will identify how to improve communication and collaboration between patients and clinicians.

One systematic review, published in 2018, addressed patient-reported factors influencing the decision-making process in older women with breast cancer in relation to accepting or declining treatment.[16] This review concluded that the decision to decline was complex and influenced by a variety of factors including treatment side effects, patient characteristics, recommendations from healthcare professionals and personal experiences. Whilst this review provided an interesting insight, the dichotomous outcome of 'accept' versus 'decline' treatment perhaps oversimplifies the nuanced treatment decision-making process older women with breast cancer face.

Over the past 5 years, growing emphasis on a tailored approach to treatment counselling for older women with breast cancer has emerged.[17] Considerations involve aligning treatment goals with life-expectancy, minimising the impact on quality of life posed by invasive treatments whilst balancing local control and involvement of multidisciplinary team members such as geriatricians.[18] The current evidence-base has been assimilated in updated guidelines from SIOG/EUSOMA which reiterated the importance of these considerations.[11]

Further systematic review is therefore warranted. Thus this objective of this study is to provide a comprehensive analysis of key factors that influence the treatment decisions of older women with operable breast cancer. Examination and categorisation of factors will enable us to provide ongoing and contemporary support to this patient group.

2 | METHODS

This systematic review was performed in accordance with the PRIMSA guidelines.[19]

2.1 | Outcome

Identification of key factors which influence the treatment decision-making of older women with operable breast cancer.

2.2 | Literature search

A systematic search of the databases Medline, Scopus and Web of Science was performed from 1 January 2000 - 23 November 2023. The search strategy was formulated with support from a clinical librarian (Suzanne Toft (ST)) (Appendix A, Table A1). Hand-search of frequently cited authors was performed to identify publications which may not have been identified in the initial search.

The search terms were 'breast cancer', 'decision-making' and 'older women'; mapped to their appropriate Medical Subject Headings.

2.3 | Inclusion and exclusion criteria

Full text, qualitative research papers published in English, from 2000 onwards reporting factors which influenced treatment decision-making in women with operable breast cancer aged 65 and over were included.

The publication of European standards for specialist breast units in 2000 was pivotal as this shaped the modern treatment experience of patients as these units facilitate and influence treatment decision-making.[20] Hence selection of 2000 as a start date intended to capture a breadth of experience which is applicable to the current setting. The age of 65 was selected as this parameter is used by the World Health Organisation[21] and NHS England[22] to identify patients of 'older age'.

Systematic reviews and guidelines were excluded. Studies limited to discussion of chemotherapy were excluded as these findings would not be comparable to studies focussing on surgical treatment. Articles that focussed only on metastatic disease were discounted; treatment options and considerations are markedly different to those with early disease and hence comparison of results would not be valid.

Studies comparing decision-making in younger to older patients were also excluded as comparative discussion would dilute the analysis, particularly in the context of differing treatment options. Analysing studies specifically focussing on older women enabled exploration of nuanced factors specific to this age group and allowed for more in-depth understanding of their decision-making process.

2.4 | Study selection

Following deduplication, title and abstract double screening was carried out independently by several authors (FM, PH, AK) utilising the Rayyan application.[23] Discordance was resolved by a senior author (RP).

2.5 | Data extraction

Data extraction was performed by two reviewers (FM, PH) which included year of publication, population, age range, study design and key findings related to factors which influenced decision-making.

2.6 | Data quality assessment and risk of bias assessment

Quality and risk of bias assessment was performed using the Critical Appraisal Skills Programme (CASP) Qualitative Checklist[24] by two reviewers (FM, NM). This tool is endorsed by the Cochrane Qualitative and Implementation Methods Group and provides a standardised method of quality appraisal and bias assessment.[25] No studies were excluded based on quality assessment.

2.7 | Data analysis

Thematic analysis was utilised to process the identified papers.[26,27] This method of analysis is used to identify themes within qualitative literature. The full text of each paper was reviewed to identify factors influencing decision-making. Factors were highlighted and coded. Collectively the these were analysed to enable comparison of similarities and patterns in the factors reported within the studies. This enabled categorisation of the factors into three broad themes which provided a framework for results reporting.

3 | RESULTS

3.1 | Search results

Thirteen studies met the inclusion criteria (Figure 1). From this point the 13 papers will be referred to by their assigned number in Table 1. The studies included a total of 1118 women. Study #6 and #7 presented outcomes based on interviews with the same cohort of women ($n = 33$) however as the outcomes reported addressed different aspects of decision-making, both studies have been included.[33,34]

3.2 | General characteristics

All studies involved patient interviews; 12 of which had purely qualitative methodology (#1-#12) and one with mixed methods which reported relevant qualitative data (#13). Table 1 summaries key characteristics, findings of each study, analysis method used and time between diagnosis and participation. A total of seven studies were conducted in North America (#1, #2, #8, #9, #11, #12, #13) and six in the UK (#3, #4, #5, #6, #7, #10).

The sample sizes ranged from 11 (#1) to 718 (#13) participants, with an age range from 65 to 99 years. A total of nine papers included women with 'early breast cancer (#2, #3, #4, #12, #13) or 'operable breast cancer' (#5, #6, #7, #10). Two papers were inclusive of those with stage I-III breast cancer (#1, #9). One study included mainly those with stage I to III disease and one with stage IV (#8). Study #11 did not report stage, surgery was the main treatment option discussed.

Five studies focussed on women offered the choice of surgery or PET (#3, #4, #6, #7, #10), two studies reported on those who declined surgery (#1, #5) and the remaining six focussed on surgical treatment (#2, #8, #9, #11#12, #13).

3.3 | Data quality assessment and risk of bias assessment

All included studies were appraised using the CASP Qualitative Checklist (Appendix B, Table B1). Nine studies fulfiled all CASP checklist criteria (#1, #2, #3, #4, #5, #6, #7, #8, #9.) demonstrating

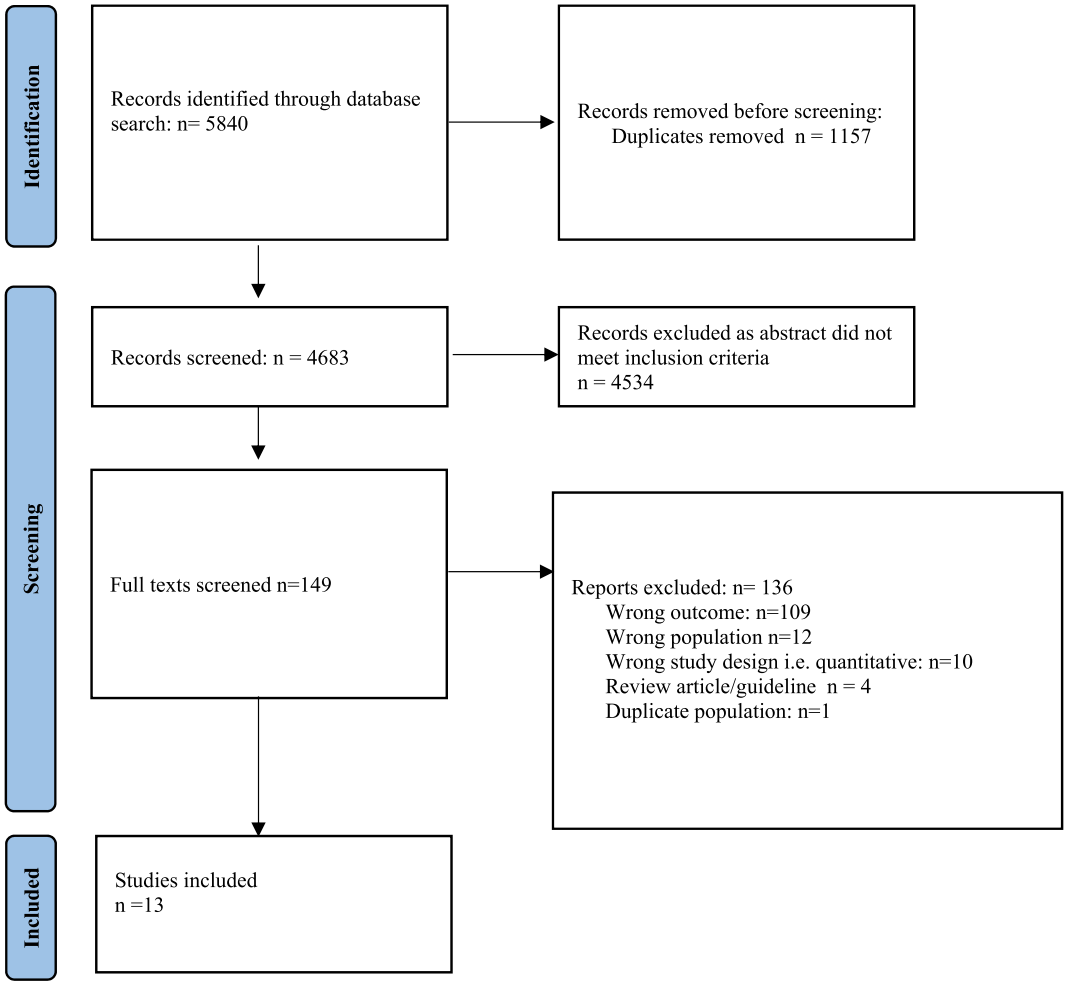

FIGURE 1 PRISMA diagram.

robust methodology. Two studies lacked methodological details; there was limited information regarding ethics in #11 and in #12 specifics related to design, recruitment and ethics were not provided. The majority were subject to selection bias (#1, #2, #3, #4, #5, #7, #8, #9, #10, #11, #12, #13). Recall bias was noted in five (#1, #4, #6, #11, #12). Reporting bias was noted in one (#5).

3.4 | Key findings of thematic analysis

Following thematic analysis; three main themes emerged. These themes were healthcare-related factors which were described in nine studies (#1, #3, #4, #6, #7, #8, #9, #10, #12), patient-related factors which were addressed in all the papers (#1-#13) and the impacts of treatment which were discussed in 10 (#1, #2, #3, #4, #5, #7, #8, #10, #11, #13).

3.5 | Healthcare-related influencing factors

Nine papers described the influence of healthcare factors impacting older women's treatment decisions which could be broadly categorised into 'interaction with clinicians' and 'provision of information'.

3.5.1 | Interaction with clinicians

Patients valued being given information related to their treatment options by clinicians in a face-to-face setting (#3, #4, #9). The opinion of their treating clinician was highly influential particularly (#4, #6, #8) to those who preferred a passive role in the decision-making process (#6, #10). Examples of such include the finding in #10 that the majority of the 21 women interviewed would decide to have surgery if their doctor recommended it and in #8 42 of the 70 patients interviewed described that they followed their clinician's treatment recommendation.

Emphasis was placed on the need to provide appropriate time for women to ask questions to their treating doctor (#1, #6, #12). Older women felt they had insufficient time to digest the treatment options presented to them (1#, #6). However, it was also common for women to perceive that their clinicians had limited time resulting in women withholding further questions (#12) and feeling rushed into decisions (#6).

TABLE 1 Summary characteristics and key findings the studies.

Study number	First author	Aim	Sample, setting and age range	Study design & data analysis	Timing of interview	Key findings
#1	Angarita 2021[28]	To identify physician and patient perceived attitudes which influence decision to avoid surgery in older women with breast cancer	*N* = 11 75–89 years Canada Stage I-III disease	Qualitative interview Framework analysis	Median 22 months post diagnosis (IQR: 4–51)	• Patients' values independence and quality of life over quantity • Patients wanted to participate in decision-making but wanted to have support
#2	Lawhon 2021[29]	To explore factors which influence older women with early-stage breast cancer treatment decisions	*N* = 33 ≥65 years USA Early-stage breast cancer	Semi-structured interview Thematic analysis	At time of treatment clinic	• Majority expressed preference for shared decision-making • Wide ranging of approaches and preferences to aid treatment decisions, thus more research needed to optimise SDM • Key factors which aided treatment decisions were trust in their physician and side effects of treatment
#3	Burton 2017[30]	To quantify patients' preferences for information and decision-making style in patients offered surgery plus adjuvant endocrine therapy versus primary endocrine therapy	*N* = 101 75–99 years UK Early-stage breast cancer	Qualitative questionnaire	Within 5 years of diagnosis	• Patients preferred patient centred and doctor centred decision-making process • Those whose treatment decision matched their preferred decision-making style had low levels of decision regret • Patients preferred information regarding treatment options to be delivered face to face
#4	Lifford 2015[31]	To gain insight into decision-making and coping process in a group of older women who have faced breast cancer treatment decisions	*N* = 35 75–98 years UK Early-stage breast cancer	Qualitative interview Framework analysis	3 to 96 months post-diagnosis	• Only partial appraisals of breast cancer and treatment options and women formed a preference for treatment quickly. • Influencing factors were past experiences of cancer and its treatment; scope for choice; risks, benefits and consequences of treatment; instincts about treatment choice and healthcare professionals' recommendations. • Described ways of coping with diagnosis and treatment decisions: Seeking information, obtaining practical and emotional support from healthcare professionals, friends and relatives, and relying on personal faith
#5	Sowerbutts 2015[32]	To explore reasons why older women are not having surgery for breast cancer	*N* = 28 70–99 years UK Operable breast cancer	Qualitative interview Framework analysis	≤30 days of diagnosis	Three categories for use of non-surgical treatment • 'Patient declined' ruled out surgery to treat their breast cancer, not interested in maximising survival and cited age or concerns about impact of treatment on level of functioning.

(Continues)

TABLE 1 (Continued)

Study number	First author	Aim	Sample, setting and age range	Study design & data analysis	Timing of interview	Key findings
						• 'Patient considered' considered surgery but chose to have PET most specifying if PET failed then they could have the operation, viewed this as two options of treatment. • 'Surgeon decided, decision was led by clinician due to comorbidities were incompatible with surgery
#6	Morgan 2015[a] [33]	To compare patient and physician views on decision-making in older patient with operable breast cancer and to explore decision-making preferences	*N* = 33. 75–94 UK Operable breast cancer	Qualitative interview Framework analysis	Median 20 months (range 3-60)	• Preferred decision-making style influenced amount of information patients wished to receive • Quality over quantity of life key determining consideration • An individualised approach with discussion of available options is preferred
#7	Burton 2015[a] [34]	The information and decision support needs of older women facing treatment choices for breast cancer	*N* = 33 75–95 years UK Operable breast cancer	Qualitative interview Framework analysis	Median 20 months (range 3-60)	• Women wanted to be involved in decision-making • Considered what treatment they might want before consultation • Those choosing PET wanted to avoid surgery considering themselves not fit enough • Those who selected mastectomy did not want additional treatment
#8	Schonberg 2014[35]	To understand older women's experience with breast cancer treatment decisions	*N* = 70 65 years and older USA Stage I-IV	Mixed methods Interviews Questionnaire Unspecified 'qualitative analysis'	At time of biopsy and follow-up at 6 months post diagnosis	• Women over 75-year-old less likely to receive endocrine therapy and were less likely to seek information from other sources. • The surgeon's recommendation was the most influential factor affecting treatment decisions. • Women perceived that they did not have choice of treatment.
#9	Pieters 2011[36]	To understand how older women who had recently undergone treatment for early breast cancer experience decision-making	*N* = 18 70–94 years USA Stage I-III	Qualitative interviews Grounded theory analysis	3–15 months post treatment completion	• Treatment decision-making process occurs by obtaining and interpreting information provided by clinicians and assessing how trustworthy these resources were. • Three common 'barriers' to decision-making were identified which included lack of knowledge, co-morbidities and logistical challenges of attending appointments

TABLE 1 (Continued)

Study number	First author	Aim	Sample, setting and age range	Study design & data analysis	Timing of interview	Key findings
#10	Husain 2008[37]	Ascertain the attitudes of breast cancer treatments in older women and what influence treatment decision.	*N* = 21 70–88 years UK Operative breast cancer	Qualitative interviews Framework analysis	Median 3 years (range 6 months to 15 years) post diagnosis	• Age and social support did not influence treatment decision. • Older women were passive information seekers and rely on healthcare professionals to make decisions. • Main concern was maintaining independence and quality of life
#11	Ciambrone 2006[38]	To explore treatment decision-making among older women with breast cancer.	*N* = 30 67–90 years USA	Qualitative interview Unspecified qualitative analysis	30% at time of diagnosis, 70% of participants post treatment on average 6 years later	• Patients received treatment in accordance with recommendations. • Older women perceive themselves as active participants in decision-making. • Needed to make a quick decision to increase chance of survival. Some women knew what treatment they did not want before consultation. • Considered that side effects from treatment were not worth the benefit as it disrupted QOL and function • Social support network was not considered significant in their treatment decisions. • Older women were content to leave the treatment decision to the doctor, as they were the 'expert'
#12	Crooks 2001[39]	Older women's experience of early-stage breast cancer.	*N* = 20 66–94 years Canadian Stage I-II breast cancer	Qualitative interviews Unspecific qualitative analysis	Not reported	• Decision-making process felt rushed. • As age increases, fewer treatment choices were offered. • Only two patients felt that the doctor know 'best'. • Decision-making was hampered by lack of information and time rather than patients preferring to delegate treatment decision.
#13	Mandelblatt 2000[40]	To ascertain whether age is associated with surgical treatment decisions.	*N* = 718 ≥67 years USA Early-stage breast cancer	Mixed methods Interviews Medical records Physician survey	Mean of 18 weeks (range 6 to 24 weeks)	• Older women receive less BCS and less radiotherapy Factors influencing decisions: • Body image • Fear of recurrence

Note: Total = 1118 patients.

[a]7. & 8. Counted once, same cohort reporting different outcomes.

3.5.2 | Provision of information

Information about treatment options was vital to the process of decision-making. Information seeking was closely linked to decision-making style (#4, #6) and two studies noted the oldest women in their cohorts sought the least information (#7, #8). Study #8 quantified this, 33% of women aged over 75 sought further information about treatments beyond what was initially presented to them by their clinician, compared to 63% of women aged 65–74 ($p = 0.02$). Studies #1 and #7 highlighted concerns regarding a lack of supplementary information resources appropriate or accessible to the older age group. Such as patient information leaflets which were not age-specific or barriers to accessing information due to its provision on an electronic or internet-based platform.

3.6 | Patient-related factors

Patient-related factors which played a part in the treatment decision-making process included age, pre-existing knowledge, and pre-conceptions about breast cancer treatment, preferred decision-making style, comorbidity, and logistical concerns.

3.6.1 | Age

Women in #10 acknowledged their age could play a role in treatment decisions, primarily through the burden of increasing comorbidity with increasing age (#10). Importantly, older women in this study did not consider their numerical age an influencing factor but their 'stage of life' was deemed influential when deciding upon treatment. Specifically, women suggested that they had already lived a long life, and as a result, were less concerned about the treatment options. Conversely, #13 compared women 65–79 years with those over 80 years, concluding that chronological age was associated with the type of treatment offered by clinicians and accepted by older women. Women in the younger subgroup were more likely to be offered radiotherapy after breast conserving surgery and those aged over 80 were more likely to decline treatment. Similarly, #5 reported that all women over 80 who were interviewed, cited age as a reason to forgo surgical treatment. In #1, which focussed only on women who declined surgery, patients frequently expressed that age was influential in their decision to decline surgery due to concerns including impact of anaesthetic on cognitive function, invasiveness of surgery and prolonged recovery.

3.6.2 | Pre-existing knowledge and preconceptions of breast cancer and treatment

Older women's treatment decisions were influenced by their existing knowledge and pre-conceptions about breast cancer and treatment, ability to assess benefits and risks of treatment, and prior experiences of family and friends.

Pre-conceptions regarding age and surgery were common. This is demonstrated in study #7 which reported that several women opting for PET stated that they were 'too old' to undergo surgery. Fear of surgery was explored in several studies; whilst study #1 concluded fear to be of minimal influence, studies #4 and # 5 highlighted concerns regarding general anaesthesia, poor tolerance and anxiety related to surgery. These differing findings are likely attributable to varying settings and sample sizes.

The experience of friends and family members who had previously undergone cancer treatment was also reported as influential across several studies (#1, #2, #4, #12). Study #9 discussed how women reported basing their decision on the experiences of others. Similarly, #10 noted that two women reported negative experience of family members as the sole factor which influenced their treatment decision.

3.6.3 | Decision-making style

Decision-making style was frequently referenced as a key determinant of decision-making. A range of decision-making style preferences were described. Women reported preferring a passive, or 'doctor-centred' style in #10 and #11. Conversely, #12 reported that all women interviewed wished to be fully involved in any treatment decision. Study #7 reported on the style preferences of 101 women; 39% of women expressed a preference for patient-centred decision-making, 38% for doctor-centred decision-making and only 24% for shared decision-making. Women who managed to reach a treatment decision according to their preferred style had the highest levels of satisfaction with their treatment (#7, #13). Furthermore, active involvement in decision-making was found to improve quality of life post treatment (#8).

3.6.4 | Comorbidity

A pragmatic awareness of the potential impact of treatment on co-morbidities was a commonly reported theme. Study #2 reported that women who declined surgery perceived their pre-existing health conditions to be more life-threatening than breast cancer, and women in #7 expressed concerns that surgery may exacerbate co-morbidities. Study #10 reported older women may not perceive breast cancer to be as 'troublesome' as their other chronic conditions.

3.6.5 | Logistical considerations

Anxiety related to the logistical impact of breast cancer treatment was a frequently reported factor. In Study #2 women expressed

concern regarding transportation, distance to hospital from home and the wish to minimise the burden on family. Reliance on family support to assist with attendance at appointments was highlighted as a significant influential factor in #8 and #9. One case which is illustrative of decisional regret due to the logistics of treatment is described in Study #7; one woman described the burden of travelling to radiotherapy after BCS and subsequent regret at opting for this treatment.

3.7 | The impact of treatment

Key factors within this the theme of 'the impact of treatment' included body image, quality of life, maintaining independence and functionality.

3.7.1 | Body image

Concern regarding the impact of surgery on physical appearance was highlighted in four studies (#2, #8, #10, #13). 68% of the 718 women interviewed in #13 reported concern with appearance. After adjusting for factors such as age and stage of cancer these women were more likely to undergo breast conservation and radiotherapy than those without appearance concerns (OR 1.8, 95%CI 1.13–2.75). Several women interviewed in #10 expressed that the loss of their breast was the worst aspect of cancer treatment. This finding could be attributed to the type of surgery that the women in this small study had undergone; eight out of 9 participants who had surgery treatment had a mastectomy.

Conversely, body image was reported to be the factor of lowest concern in 101 women offered the choice between surgery and PET in #3. This was echoed in #4 which also investigated patients choosing surgery and PET; the majority of the 35 women interviewed were not concerned about body image. Surgical treatment was sought by 57% and 34% of participants in #3 and #4 respectively. However, both papers lacked details of proportions undergoing mastectomy and breast conserving surgery.

3.7.2 | Quality of life, independence and functionality

Impact of treatment on quality of life was frequently reported as a deciding factor for treatment selection (#1, #2, #4, #7). Study 10 cited this to be the most important factor to women in their study. The term 'quality over quantity' was reiterated by patients interviewed in #1, #7 and #11. Women expressed concerns that surgery and radiotherapy may impact their physical function and ability to perform basic activities of daily living (#2). Study #7 included 33 women over 75 and highlighted that the fear of losing independence resulted in an increased uptake of PET. Congruently, #4 noted a propensity for PET, influenced by women viewing surgery to carry a high threat of losing independence. Study #5 reported that older women declined surgery wishing to retain independence and avoid burdening others.

4 | DISCUSSION

This is the most contemporary review of the literature examining factors which influence how older women make decisions regarding treatment for breast cancer. Thematic analysis of the included studies has enabled identification of three key themes which can be used as a framework to support women faced with treatment decisions. The studies all reflect aspects of decision-making in older women with breast cancer and highlighting the breadth of influencing factors presented within the themes.

All studies presented a degree of bias. Most commonly selection bias was identified which can be attributed to the use of patient interview. Recall bias was also prevalent; the majority conducted patient interviews after treatment decisions had been made, some years later. A large study exploring patient attitudes towards research participation including over 60,000 patients with cancer highlighted that willingness varied over the course of treatment.[41] A degree of recall bias in the context of qualitative studies into cancer treatment decision-making is therefore acceptable to maximise patient participation.

4.1 | Healthcare-related influencing factors

Firstly, healthcare related factors including how women interact with their treating clinician and the method of face-to-face information delivery were commonly reported determinants in the decision-making process. Many deemed the influence of their treating clinicians to play a leading role in their treatment decision. This reflects the findings of a study assessing how 613 older women with breast cancer communicated with their physicians which highlighted that satisfaction with treatment decision was higher in women who reported high levels of patient-physician communication.[42] Furthermore a cross sectional survey of 222 patients with breast cancer demonstrated that the interactive provision of information by clinicians resulted in improved patient knowledge, higher rates of BCS and reduced delays to treatment.[43]

'Decision aids' to supplement clinician discussion have been the subject of a number of studies. Two systematic reviews assessing 'decision aids' for patients with breast cancer have shown these to be useful adjuncts in the treatment decision-making process, citing enhanced knowledge and reduced decisional uncertainty as benefits.[44,45] These reviews related to aids which were not age specific; the findings of this current review highlight a lack of decision resources designed for older women suggesting that this group would benefit from tailored aids.[28,34] Recently measures to improve age specific 'decision aids' were developed as part of the 'Bridging the age

gap' trial which published results of the efficacy of age specific information booklets and a validated online resource. This trial reported that the use of 'decision aids' improved knowledge and resulted in altered treatment choice.[46] Each patient should be provided with age specific information and the factors highlighted in this review could help shape further development of 'decision aids' to support treatment discussions.

4.2 | Patient-related factors

The results from this review highlight patient-related factors which influence treatment choice. Whilst clinically accepted that a patient's functional fitness rather than chronological age should be a factor in treatment planning,[11] a recurrent theme in this review was that women themselves may perceive their age or overall health to be a barrier to surgery. A qualitative study on older women's perceptions of breast cancer treatment found that positive reframing regarding breast cancer prognosis provided reassurance.[47] Furthermore a multicentre cohort study of women over 70 with breast cancer in the UK found that breast surgery was safe with minimal adverse post-operative events and no mortality.[13] Based on these findings surgically fit women should be counselled regarding the risks and benefits of surgical treatment regardless of age.

This review has revealed that older women's perception of breast cancer treatment may be adversely impacted by the prior experiences reported by their friends and relatives. This is illustrated in a patient quote reported in Study #6; 'we lost a daughter-in-law with breast cancer, she was only 26, and that's 30 years ago… Cancer is the most frightening word.' A study of women over 70 with breast cancer postulated that older women may opt for mastectomy over BCS as they have grown up in an era where mastectomy was more widely used.[48] In a systematic review of 38 studies of older patients with various types of cancers, the treatment experiences of others was one of the main factors which influenced their decision to accept or decline treatment.[49] Clinicians must be aware that older women may have preconceived ideas based on assumptions regarding their age, comorbidity and the past experience of family with cancer treatment. Actively enquiring regarding such preconceptions would therefore ensure that women's concerns and assumptions are addressed appropriately prior to making a treatment decision.

Decision-making style is highly influential to the treatment decision-making process. This review highlights that older women exhibit a range of decision-making style preferences which will determine information seeking behaviours and overall satisfaction with treatment decision. Whilst studies published towards the end of the 1990s reported that older women with breast cancer prefer a passive or physician-driven decision-making style.[50,51] The findings from this review did not support this, which is congruent with a study of decision making style in 697 consecutive patients with breast cancer who reported a predominance of an 'active' decision-making style.[52] A qualitative study of decision-making styles of patients aged 70–89 with colorectal cancer suggested that explicit discussion of an individual's preferred decision-making style could improve patient/clinician interactions.[53] In line with this recommendation, due to the heterogeneity of style preference described in this review we would advocate that clinicians discuss individual woman's preferred decision-making style during initial consultations.

4.3 | The impact of treatment decisions

Impact on quality of life and functional status frequently influenced decision-making. Surgery has been shown to have a negative impact on quality of life in a multicentre UK trial of older women with breast cancer.[13] Furthermore, a systematic review of the functional impact of breast cancer surgery on older people concluded that potential decline in functional status should be discussed in all older women considering surgery.[54] Therefore, in line with these findings, frank discussion of the risks and benefits of surgical and non-surgical treatment options in older women should be routinely practised.

The impact of treatment on body image was variably reported within papers in our review; most notably this was the worst aspect of treatment for several women who underwent mastectomy in the study by Husain et al (2008). This reflects recent findings from a cohort of 325 women of all ages with breast cancer which reported that surgery negatively impacted body image irrespective of age.[55] Hence there is need for careful discussion to elicit individual patient concerns related to body image, particularly in the context of surgical treatment. Additional considerations to discuss with older women include the logistics of treatment such as transport to hospital for treatment and follow-up appointments and need for additional support in the event of functional decline.

4.4 | Limitations

Characteristics of those women who agree to participate in the research discussed in this review may not be entirely representative of the population of older women with breast cancer and thus lead to selection bias. Recall bias was also a notable issue across a number of included studies as these included women who completed cancer treatment in the past. A limitation of the methodology was that only papers available in English were included. This contributed to only studies from the UK and North America being identified which may limit the application of findings outside of western practise.

4.5 | Clinical implications

This review has demonstrated the importance of communication between older women and clinicians, consideration of preconceptions about treatment and decision-making style preferences patients may have and the provision of accessible, age-appropriate

information about treatment options. Women need personalised information, specific to their age group which addresses key factors such as impact of treatment on quality of life and functional status. The perception that older women do not want to be involved in decision-making and that they have little concern over body image have been challenged. Clinicians should tailor their approach to each individual patient. Addressing patients' knowledge, preferences, social background, concerns, and expectations is key to ensuring and supporting patients to arrive at the best treatment decision for their individual needs.

5 | CONCLUSION

The aim of this systematic review was to identify key factors which influence the treatment decision-making in older women with operable breast cancer. Three key decision-making themes were identified: healthcare related factors, patient related factors and the impact of treatment. The complexities of the decision-making process have been discussed and the existing evidence has been explored. Given the heterogeneity of older women with breast cancer and the significance of the factors influencing decision-making it is important for the clinician to understand that the process of decision-making in this population is incredibly nuanced. At the time of treatment decision-making active attempts should be made to elicit patient preferences and pre-conceptions. Clinicians involved in the care of older women with breast cancer should have an awareness of the factors highlighted and these can provide a framework to guide treatment discussions.

AUTHOR CONTRIBUTIONS

Study design: Francesca Ligori Malcolm, Penny Howard, Ruth Mary Parks, Kwok Leung Cheung. Acquisition of data: Francesca Ligori Malcolm, Penny Howard, Anita Maria Klukowska, Nikita Minhas. Data analysis and interpretation: Francesca Ligori Malcolm, Penny Howard, Anita Maria Klukowska, Nikita Minhas. Manuscript preparation: Francesca Ligori Malcolm, Penny Howard, Anita Maria Klukowska, Ruth Mary Parks. Manuscript review: Francesca Ligori Malcolm, Penny Howard, Ruth Mary Parks, Kwok Leung Cheung. Supervision: Kwok Leung Cheung.

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CONFLICT OF INTEREST STATEMENT

Nil to declare.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

ETHIC STATEMENT

Ethical approval not required.

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APPENDIX A

TABLE A1 Search strategies adapted to suit the Medline, Web of Science and SCOPUS.

OR Breast cancer	AND Primary	AND Decision-making	AND Older women
Breast adj3 cancer	Primary	'Decision-making'	Elderly
'Breast neoplasm'	Early-stage	Therapy adj3 choice	Older
Tumour adj3 breast		Treatment adj3 choice	Ageing
Tumour adj3 breast			Ageing
Breast adj3 neoplasm			Woman
			Women
			Female
			Geriatric
			Frail
			Aged
			'Over 65 years'

APPENDIX B

TABLE B1 Results of critical appraisal skills programme qualitative research checklist.

Study number	Author & year	CASP assessment[a]										
		1[b]	2[c]	3[d]	4[e]	5[f]	6[g]	7[h]	8[i]	9[j]	10 'How valuable is the research?'	Bias identified
#1	Angarita (2021)	Y	Y	Y	Y	Y	Y	Y	Y	Y	'Valuable - included physician and patient perspectives to enhance understanding of main determinants of why patients declined surgery'	Selection, recall
#2	Lawhon (2021)	Y	Y	Y	Y	Y	Y	Y	Y	Y	'Valuable—addressed the application of decision-making considerations within the context of shared decision-making'	Selection
#3	Burton (2017)	Y	Y	Y	Y	Y	Y	Y	Y	Y	'Valuable - highlighted that older women did not prefer a passive role in decision-making and most prefer clear information on paper & face to face'	Selection, recall
#4	Lifford (2015)	Y	Y	Y	Y	Y	Y	Y	Y	Y	'Valuable—looked at various coping strategies for patients'	Selection, recall and reporting
#5	Sowerbutts (2015)	Y	Y	Y	Y	Y	Y	Y	Y	Y	'Valuable, insightful subgroup analysis'	Selection
#6	Morgan (2015)	Y	Y	Y	Y	Y	Y	Y	Y	Y	'Valuable, identified discrepancies between health-care professionals tendency to assume older patients want less information about treatment options than their younger	Recall

(Continues)

TABLE B1 (Continued)

Study number	Author & year	CASP assessment[a] 1[b]	2[c]	3[d]	4[e]	5[f]	6[g]	7[h]	8[i]	9[j]	10 'How valuable is the research?'	Bias identified
											counterparts, suggestions for further research and development of decision aids also address'	
#7	Burton (2015)	Y	Y	Y	Y	Y	Y	Y	Y	Y	'Valuable - looked at aspects through 3 themes and analysed the impacts of each'	Selection, recall
#8	Schonberg (2014)	Y	Y	Y	Y	Y	Y	Y	Y	Y	'Valuable - included pre and post diagnosis interviews. Also addressed that it is limited to a certain population and ethnicity	Selection, recall
#9	Pieters (2011)	Y	Y	Y	Y	Y	Y	Y	Y	Y	'Valuable - found contrasting results in that older patients also benefited from support from a dedicated HCP to guide decision-making process'	Selection, recall
#10	Husain (2007)	Y	Y	Y	Y	Y	N	Y	Y	Y	'Overall outcome was that no real generalisations can be taken from the study and that further studies required on this topic'	Selection, recall
#11	Ciambrone (2006)	Y	Y	Y	Y	Y	N	-	Y	Y	'Valuable findings, thorough report of decision-making noting lack of information regarding ethical approval'	Selection, recall
#12	Crooks (2001)	Y	Y	-	-	-	-	-	Y	Y	'This study lacks detail regarding decision, hence unable to comment on number of CASP domains, however detailed results presented meet the inclusion criteria'	Selection, recall
#13	Mandelblatt (2000)	Y	Y	Y	Y	Y	Y	N	Y	Y	'Sets a starting point and points out areas for further research and expansion upon their findings for the future'	Selection, recall

Abbreviations: -, not enough information provided to assess; N, No; Y, Yes.

[a]CASP Assessment Questions.

[b]Was there a clear statement of the aims of the research?.

[c]Is a qualitative methodology appropriate?.

[d]Was the research design appropriate to address the aims of the research?.

[e]Was the recruitment strategy appropriate to the aims of the research?.

[f]Was the data collected in a way that addressed the research issue?.

[g]Has the relationship between researcher and participants been adequately considered?.

[h]Have ethical issues been taken into consideration?.

[i]Was the data analysis sufficiently rigorous?.

[j]Is there a clear statement of findings?.