Learning Outcomes

Upon completion of this activity, the learner will be able to:

1. Compare the strengths and limitations of various breast risk assessment models appropriate for individualized women's care.
2. Evaluate the impact of increased utilization of breast cancer risk assessment tools within primary care and mammography settings.

Continuing Nursing Education (CNE) Credit

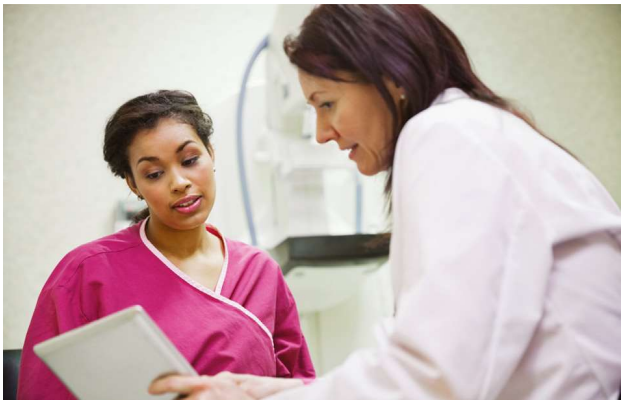
A total of 1.30 nursing contact hours may be earned for reading "A Review of the Literature for Individualizing Women's Care Through Breast Cancer Risk Assessment" and for completing an online posttest and participant feedback form through June 2, 2026. A score of 80% or higher on the posttest is required to receive nursing contact hours.

This learning activity is free for AWHONN members and available for purchase by nonmembers. To access it, visit the AWHONN store at https://www.awhonn.org/awhonn-store/ and type NWH into the search box.

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A Review of the Literature for Individualizing Women's Care Through Breast Cancer Risk Assessment CNE

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ABSTRACT: Breast cancer is well recognized as a leading type of cancer affecting women in the United States. Although breast cancer screening is well supported in the literature, there is a lack of clear agreement regarding which breast cancer risk calculating tools should be used to develop personalized screening regimens. In this review of 11 primary articles published from 2017 through 2022, we assess current evidence on breast cancer risk assessment in outpatient clinic and mammography settings and the pivotal role of health care providers in influencing patients' choices regarding individualized screenings. Risk assessment is strongly recommended by multiple clinical practice guidelines, yet there is inadequate evidence to endorse one risk assessment tool as best practice. Further research is needed to integrate risk assessment within the clinic workflow and screening encounters. Patient-centered communication and shared decision-making are critical components for managing each woman's perceived risk and objective risk for breast cancer.

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KEYWORDS: breast cancer, breast neoplasms, mammography, patient-centered care, risk assessment, shared decision-making, workflow

In the United States, 287,850 women and 2,710 men were estimated to be newly diagnosed with invasive breast cancers in 2022 (American Cancer Society [ACS], 2022b). More specifically, one in eight women will be diagnosed with breast cancer in her lifetime, equivalent to a 13% lifetime risk (ACS, 2022b). Breast cancer risk assessment is recommended for all women by age 25 years as a way to inform individualized screening plans (National Comprehensive Cancer Network [NCCN], 2022a). Nonmodifiable risk factors for breast cancer include female sex, advancing age, early menarche, late menopause, and dense breast tissue (ACS, 2022b). Women with pathogenic genetic variants, a family history of breast cancer, or prior chest radiation

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CLINICAL IMPLICATIONS

- Women are motivated to learn of their own risk for breast cancer and options for breast cancer screenings.
- Nurses can promote individualized screenings by performing breast cancer risk assessment in ambulatory care settings.
- Advanced practice nurses can use a standardized risk assessment tool to frame discussions with women regarding a personalized breast health plan.

may be at greater risk, equivalent to greater than 20% lifetime risk using objective risk assessment models (NCCN, 2022b).

Various risk assessment models are available, including the BRCAPro, the Breast and Ovarian Analysis of Disease Incidence and Carrier Estimation Algorithm, Breast Cancer Risk Assessment Tool (BCRAT), Claus model, International Breast Cancer Intervention Study [IBIS]/Tyrer–Cuzick (NCCN, 2022a), and Ontario Family History Assessment Tool (U.S. Preventive Services Taskforce [USPSTF], 2019a). Each model has strengths and limitations, and the same woman may receive different risk calculations depending on the model chosen (ACS, 2022a; see Table 1). Once quantified, each woman's risk is managed through breast cancer screenings, and risk can be decreased through lifestyle changes, medications, or surgeries.

According to researchers who conducted the 2020 National Nursing Workforce Survey, the majority of registered nurses in the United States work in hospitals (54.8%), followed by ambulatory settings (9.7%; Smiley et al., 2021). Nurses and other health care providers in outpatient settings can facilitate individualized breast cancer screening to identify high-risk women. NCCN (2022a, 2022b) guidelines encourage breast cancer screening through routine clinical examinations that minimally include reviewing a woman's medical and family history, conducting a breast cancer risk assessment, and performing a clinical breast examination. Planned patient encounters stimulate discussions between patients and providers about breast cancer risk and overall health, thus facilitating shared decision-making. It is recommended that women considered to be at high risk for developing breast cancer receive more frequent assessments that may include clinical encounters every 6 to 12 months, referrals to genetics specialists, screening mammograms, breast magnetic resonance imaging (MRIs), and risk reduction strategies (NCCN, 2022a). Patients are advised to practice breast self-awareness rather than perform a technical breast self-examination and report changes to their health care providers (ACS, 2022a; NCCN, 2022a). Many professional organizations do not recommend formal breast self-examination because this has not been shown to decrease breast cancer mortality, yet this topic remains debated (ACS, 2022a; U.S. Preventative Services Task Force, 2009). This review appraises the current literature on breast cancer risk assessment in outpatient clinic and mammography settings and the impactful role of health care providers as influencers of patients' choices regarding individualized screenings.

BOX 1 HIERARCHY OF EVIDENCE

Level I: Systematic review of RCT or systematic review of nonrandomized trials
Level II: Single RCT or single nonrandomized trials
Level III: Systematic review of correlational or observational studies
Level IV: Single correlational or observational study
Level V: Systematic review of descriptive, qualitative, or physiologic study
Level VI: Single descriptive, qualitative, or physiologic study
Level VII: Opinions of authorities or expert committees
Note. RCT = randomized controlled trial. Source: Polit and Beck (2021).

Review Method and Search Process

We conducted a literature search for the most contemporary peer-reviewed research published from 2017 through 2022 using the databases PubMed and Cumulative Index to Nursing and Allied Health Literature (CINAHL). Key words included "breast cancer risk assessment," "breast cancer," "high risk," "women," and "mammography." The Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flowchart presents the search of 190 sources (Page et al., 2021; see Figure 1). A total of 179 articles were excluded with reasons listed in the flowchart. Eleven articles met the inclusion criteria of providing current data regarding breast cancer risk assessment for women in outpatient clinic or mammography settings, being a primary source, and being published in a peer-reviewed journal in English (see Supplementary Table S1). Commonalities among all articles included risk assessment tools; risk assessment at the time of mammography or in clinic settings; variation in the different risk models available; and the roles of patients, health care providers, and high-risk breast clinics in identifying high-risk patients. All articles were categorized as Level VI as single descriptive studies in the Polit and Beck hierarchy of evidence (see Box 1).

Risk Assessment Tools

Risk assessment is endorsed by numerous professional organizations as a component of breast health for informed screening decisions (Monticciolo et al., 2018; NCCN, 2022b; USPSTF, 2019b). However, the variety and

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TABLE 1 BREAST CANCER RISK ASSESSMENT TOOLS

Model	Strengths	Weaknesses	Location of Tool	References
Breast Cancer Risk Assessment Tool (BCRAT) Gail model National Cancer Institute Breast Cancer Assessment Tool	• Free and widely available • Easy to use	• Excludes women <35 years and those with history of invasive breast cancer • Only captures first degree relatives in family history of disease	https://bcrisktool.cancer.gov	National Cancer Institute (2022)
Breast Cancer Surveillance Consortium Risk Calculator (BCSC)	• Free and available online • Includes age, race/ethnicity, first-degree family history, prior breast biopsies, and breast density	• Does not calculate lifetime risk, which is often a qualifier for management options • Excludes those <35 and >74 years old	https://tools.bcsc-scc.org/BC5yearRisk/calculator.htm	Breast Cancer Surveillance Consortium (2016)
Breast and Ovarian Analysis of Disease Incidence and Carrier Estimation Algorithm (BOADICEA)	• Includes detailed family history • Includes risk assessment for breast and ovarian cancer	• May require software download • Often used as a research tool	https://www.canrisk.org/	Antoniou et al. (2004)
BRCAPro	• Includes detailed family history of first and second degree affected and unaffected relatives • Free to use for nonclinical research	• Requires software • Does not incorporate risk factors other than heredity • Only includes *BRCA* mutations; excludes other genetic mutations • Newest version includes ethnicity for each family member	https://projects.iq.harvard.edu/bayesmendel/our-software	Terry et al. (2019)
Claus model	• Incorporates ovarian cancer history and paternal family history	• Does not address risk factors outside of family history	https://www.princetonradiology.com/service/mammography/breast-cancer-risk-assessment/	Amir et al. (2003)
Tyrer–Cuzick International Breast Cancer Intervention Studies Cancer Risk Evaluation Tool (IBIS)	• Can be used under age 35 years • Incorporates detailed family history with second degree relatives	• Requires a downloadable computer program	https://ems-trials.org/riskevaluator/	Tyrer et al. (2004)

(*continued*)

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TABLE 1 CONTINUED

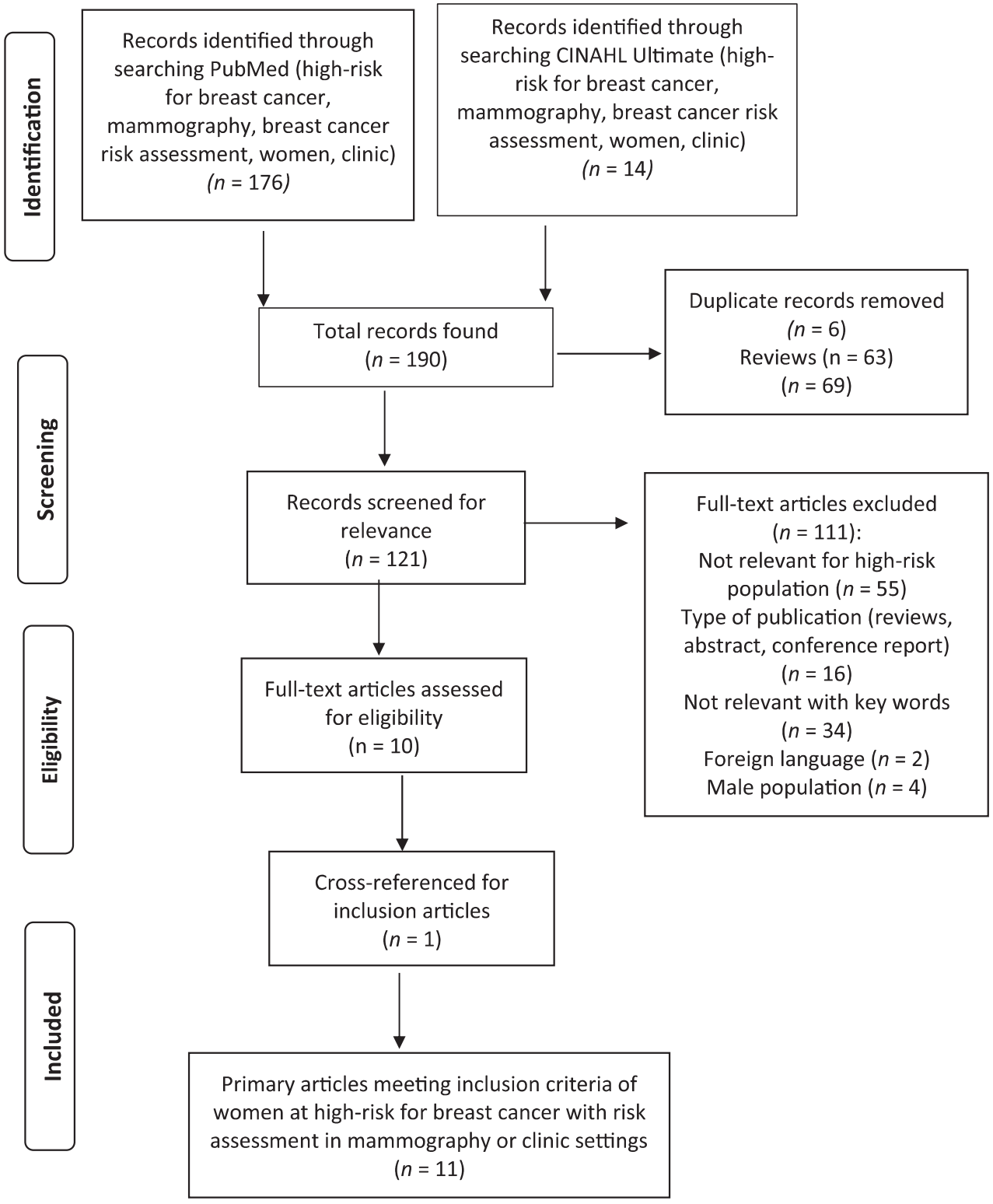
Model	Strengths	Weaknesses	Location of Tool	References
	• Includes breast density, hormone factors, and history of benign breast changes			
Ontario Family History Assessment Tool (Ontario-FHAT)	• Risk assessment tool for BRCA-related cancers (breast, ovarian) • Easy to score • Tool available online and can be replicated • First, second, or third degree relatives • Free download	• Primarily focuses on assessment of those at risk for *BRCA*-related cancers who would benefit from genetic testing	https://www.timeofcare.com/ontario-family-history-assessment-tool/	Gilpin et al. (2000)

complexity of risk assessment tools can be overwhelming for clinicians in busy practice (Himes et al., 2019). The American College of Radiology advises that all women complete a breast cancer risk screening tool by age 30 years, especially women who are African American and Ashkenazi Jewish (Monticciolo et al., 2018). The USPSTF recommends that primary care providers assess women with a family history of breast cancer or ancestry associated with the breast cancer susceptibility 1 and 2 genes (*BRCA1/BRCA2*) with a brief risk assessment tool. Screening tools for referrals to genetic counseling are endorsed by the USPSTF, including the Ontario Family History Assessment Tool (Ontario-FHAT), Manchester Scoring System, Referral Screening Tool, Family History Screen 7 (FHS-7), Pedigree Assessment Tool, International Breast Cancer Intervention Study instrument, and abbreviated version of the BRCAPro. The intent of these tools is to identify women who would benefit from genetic counseling rather than to assess an objective lifetime risk for breast cancer (USPSTF, 2019b).

In this literature review, only one group of researchers sought to construct a new risk assessment instrument for the detection of women at increased risk for breast cancer in a mammography setting (Abdolell et al., 2020). The receiver operating characteristic curve is a way to graphically portray and compare the sensitivity and specificity of tests by measuring the area under the curve (AUC; Safari et al., 2016). With an AUC of 0.660, this model attained the best performance with the inclusion of mammographic density, breast volume, age, biopsy, and family history. This model's accuracy is similar to that of the BCRAT, also known as the Gail model, which is widely used in daily clinical practice (Gail et al., 1989; Kim & Bahl, 2021). Components of the BCRAT include a woman's current age, age at menarche, age at first childbirth, quantity of first-degree relatives with breast cancer, quantity of prior breast biopsies, and any prior diagnosis of atypical hyperplasia (National Cancer Institute, 2022).

Himes et al. (2019) conducted a descriptive study that examined six different risk assessment tools for the identification of high-risk women who met criteria for genetics referrals. This study compared the Ontario-FHAT, Manchester Scoring System, Referral Screening Tool, FHS-7, and Pedigree Assessment Tool to the Claus model. Each of these tools is endorsed by the USPSTF, yet one is not designated as superior (USPSTF, 2019b). Using the AUC, p values for all screening tools were $>.05$; thus, the AUC was not useful in assessing the performance of the tools. The Ontario-FHAT was shown to be superior for its 100% sensitivity and negative predictive value; thus, if this tool excluded a patient from genetics referral, the patient is not likely at high risk. By contrast, the FHS-7 had 100% sensitivity yet 0% specificity, thereby recommending referrals for all 85 patients, potentially overwhelming genetics resources. Further research is needed with younger

FIGURE 1 **PREFERRED REPORTING ITEMS FOR SYSTEMATIC REVIEWS AND META-ANALYSES (PRISMA) FLOW DIAGRAM**



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participants starting at age 30 years, when some begin breast cancer screening regimens (Himes et al., 2019).

> Planned patient encounters stimulate discussions between patients and providers about breast cancer risk and overall health, thus facilitating shared decision-making

Risk Assessment Delivery

Risk Assessment in a Screening Mammography Setting

Capturing breast cancer risk assessment during screening mammography has been investigated in imaging centers throughout the United States (Jiang et al., 2019; Morman et al., 2017; Silver et al., 2019). In a prospective descriptive study, Morman et al. (2017) evaluated risk assessment in conjunction with routine screening mammography at two imaging centers in the Ohio Health system. Of 9,388 women, 4,114 (44%) women chose to have breast cancer risk assessment, and of these, 309 women met the high-risk criteria, defined as 20% or greater lifetime risk. The women who were at high risk for breast cancer were mailed a letter with directions for clinical follow-up and genetic counseling as indicated. Genetic counseling was recommended for 78% ($n = 243$) of these women, but only 10% of women completed a genetics encounter. Women who reviewed the risk assessment with their referring providers were more likely to return for a clinical breast examination at the recommended 6-month interval (53% vs. 17%, $p = .018$). Risk assessment was rated as very or somewhat helpful for 68% of the participants. Because physician and patient communication were a key component for adherence with recommendations, there is a need for future studies exploring ways to promote patient and provider interactions (Morman et al., 2017).

Also, in imaging centers in the United States, Silver et al. (2019) implemented a semiautomated system for risk evaluation prompting referrals for genetic counseling. Of the 20,558 women who presented for a mammogram, 2,000 women automatically met the high-risk threshold using the Athena Breast Health Questionnaire that incorporated the USPSTF guidelines for genetics referrals and the Gail model. This program used a two-step approach, including direct letters to patients and referring providers. Of the 2,000 women, 420 met the inclusion criteria and received a risk assessment letter, with only 225 proceeding to breast health genetic counseling. Of these 225 women, 135 were self-referred and 90 were referred by their providers, which suggests the importance of the referring provider in a successful program. Women who contacted the clinic after receiving a letter were often younger than 60 years, but otherwise the groups were of similar race and education level. Future studies are needed integrating newly described genetic mutations, risk models other than the Gail model, and improved methods of collecting patient-reported breast cancer risk factors (Silver et al., 2019).

Jiang et al. (2019) conducted a retrospective chart review for 9,514 women who received screening mammograms at Columbia University Irving Medical Center during 2014 through 2016. The Breast Cancer Surveillance Consortium model was used for risk assessment using self-reported data and electronic health record (EHR) data. Self-report was superior to the EHR in identification of those with a first-degree family history of breast cancer (14.6% vs. 4.4%) and prior breast biopsy history (21.3% vs. 11.3%), whereas the EHR better identified women with prior atypia or lobular carcinoma in situ (2.3% vs. 1.1%) than self-report. Overall, women at increased risk were proportionally recognized by self-report and the EHR (15% vs. 14.6%) with moderate agreement. Further research is needed to integrate software into the EHR that could display individualized breast cancer risk profiles and incorporate this into mammography reports (Jiang et al., 2019).

Risk Assessment in a Primary Care Setting

There is variation in practice patterns for calculating breast cancer risk projections in ambulatory care settings (Amornsiripanitch et al., 2021; Schwartz et al., 2021). Amornsiripanitch et al. (2021) surveyed 75 obstetricians, gynecologists, and family and internal medicine providers to explore provider recognition of women at high risk for breast cancer and subsequent ordering of screening breast MRIs. Only 23 of 75 (31%) providers accurately defined high risk according to the ACS as greater than 20% lifetime risk. However, more providers estimated risk qualitatively by family or clinical history (97%) than quantitively with risk assessment calculators (29%). Only 12% of clinicians endorsed a screening breast MRI for appropriate patients. Further studies are needed combining intuitive technology to identify women at high risk with the integration of risk-calculating software. Amornsiripanitch et al. (2021) recommended that risk assessment and patient communication during a screening mammogram may be an avenue toward individualized, patient-centered care.

Schwartz et al. (2021) performed a prospective cohort study at a midwestern U.S. federally funded center to determine if personalized breast cancer risk assessment as part of preventative health visits was correlated with increased screening mammogram uptake in women at high risk for breast cancer. In this cohort of 347 women with a mean age of 50.8 years, 188 women were appropriate for mammography. Of these, 114 participants (60.6%) were African American, 70 women (37.2%) were Hispanic, and 4 (2.1%) represented other backgrounds. Clinic employees recorded

> The variety and complexity of risk assessment tools can be overwhelming for clinicians in busy practice

risk factor information provided by patients during intake for a routine visit. The software then generated risk assessment profiles and provider decision support with recommendations for chemoprevention, enhanced screening, and genetic counseling. In the high-risk population, the frequency of yearly screening mammogram significantly improved from 37% to 51% after risk assessment implementation. Further research is needed regarding this approach for medically underserved African American and Hispanic women because these women have greater rates of breast cancer mortality than White females (Schwartz et al., 2021).

Patient Perceptions of Breast Cancer Risk

Investigations have been conducted regarding patient preferences for communication of their personalized risk for breast cancer (Amornsiripanitch et al., 2017; Mehta et al., 2022; Xie et al., 2019). In a prospective study of women involved in a screening mammogram program, Amornsiripanitch et al. (2017) explored patient perceptions regarding risk assessment. Among 1,061 surveys, 503 were completed (47% response rate), and a majority of 431 patients (86%) were motivated to learn of their estimated lifetime risk. Women at average to intermediate risk preferred a mailed letter with mammogram and risk results (26%) compared to women at high risk, who strongly favored oral communication. Women who were at high risk for breast cancer had a 10-fold greater likelihood of preferring a verbal explanation of their results. The authors did not explicitly state which risk assessment tool was used. Further research is needed to measure the outcomes of risk assessment incorporated into a screening mammogram encounter. These outcomes may include referrals to specialists, use of supplemental screenings, or mammography adherence (Amornsiripanitch et al., 2017).

Xie et al. (2019) performed a multicenter prospective pilot study to evaluate the connections between individualized risk communication and women's risk appraisal, anxiety, and worry. Elevated risk was defined as meeting USPSTF guidelines for genetics evaluation for *BRCA1/BRCA2* or a 5-year risk score of >1.67 per the Gail risk model. A sample of 122 women with a negative mammogram result yet an increased risk were given surveys to assess their perception of their own likelihood for developing breast cancer. The participants received letters explaining their risk and received genetic counseling with a follow-up survey. Women were found to overestimate their cancer risk, yet counseling slightly lessened their overestimation (49% preintervention vs. 42% postintervention; Xie et al., 2019).

Mehta et al. (2022) performed a descriptive, cross-sectional study to compare each woman's perceived breast cancer risk to an objective risk assessment using the Gail risk assessment model. The population included 550 women ages 40 years and older in two outpatient clinic settings, and 5.6% were determined to be at high risk (>20% lifetime risk), 7.7% were at intermediate risk (15%–20% lifetime risk), and 86.6% were at average risk (<15% lifetime risk). Of those at high risk, 66.7% underestimated their risk, whereas 30.1% of women at average risk of breast cancer overestimated their own risk. Interestingly, those who underestimated their risk were more likely to have a first-degree family history of breast cancer and prior abnormal mammogram findings. This study emphasized patient and provider discussions regarding risk assessment and perception to achieve optimal breast health (Mehta et al., 2022).

Role of High-Risk Breast Clinics

Specialized breast health nurse practitioners (NPs) offer patient-centered care for high-risk women. NPs can function as part of a multidisciplinary team with experts in breast imaging, risk appraisal, genetics, and risk-reducing surgeries. Laws and Mulvey (2021) specifically discussed the nursing role and described the execution of an NP-led high-risk breast clinic (HRBC) after universal risk assessment was implemented across five imaging centers. A retrospective chart review was completed on the program's 318 patients. Of all recommendations, screening MRI had the highest acceptance, with 184 patients (65%) completing breast MRIs. In this group of 184 women, two mammographically occult cancers were found. Patients who identified as White were more likely to use the HRBC (94.3% vs. 85.4%; $p < .001$) than women of other backgrounds. This NP-led HRBC demonstrated high-quality comprehensive patient care, yet low community referral patterns were shown to be barriers for patient access (Laws & Mulvey, 2021).

Discussion

Risk assessment is well supported through various national guidelines (Monticciolo et al., 2018; NCCN, 2022b; USPSTF, 2019b). Researchers' conclusions from the articles in this review lacked consensus regarding which risk assessment model is preferable (Abdolell et al., 2020; Himes et al., 2019; Schwartz et al., 2021; Silver et al., 2019). However, the Gail model or BCRAT was the most frequently used instrument. The researchers did not explicitly discuss their choice of risk assessment tool, yet the Gail model is a readily available, Web-based resource that is user-friendly for patients and nurses. Successful implementation of breast cancer risk assessment in busy ambulatory clinics requires tools that are quick and easy to use. Thus, the Gail model is recommended as an initial screening tool in the daily processes of outpatient clinics and mammography centers.

Previous researchers provided in-depth reviews of risk assessment tools and recommended the integration of risk

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assessment software into clinic workflows (Barke & Freivogel, 2017). Similarly, our review promotes the incorporation of quantitative tools for risk calculation in primary care practices (Amornsiripanitch et al., 2021; Schwartz et al., 2021). Embedding risk assessment tools in the EHR warrants further development in ambulatory care settings. The optimal method for collecting risk assessment data, whether from self-report or data extraction from the her, also remains debatable (Jiang et al., 2019).

Financial constraints are a well-recognized barrier for breast cancer risk management, including completion of breast MRIs and genetic counseling (Meadows & Padamsee, 2021). The articles in this review did not explicitly discuss financial barriers affecting individualized breast cancer screenings. However, among eligible women, there was a low uptake in genetic counseling consistent with prior literature (Morman et al., 2017; Silver et al., 2019). Such barriers to high-risk screenings and management warrant further exploration in future research.

Finally, the role of the women's health provider emerged as a key factor influencing patient decision-making and adherence to screening recommendations (Amornsiripanitch et al., 2021; Morman et al., 2017; Silver et al., 2019). Schwartz et al. (2021) did not explicitly discuss the nursing role yet did state that clinic staff can be instrumental in collecting each woman's medical history for entry into risk prediction software. The breast health NP role was highlighted by Laws and Mulvey (2021) because their NP-led clinic managed high-risk women and coordinated specialty care with genetic testing, supplemental breast imaging, and chemoprevention. A similarly structured NP-led high-risk breast program was previously described including the NP role of obtaining a woman's medical history, providing patient education, and discussing breast cancer risk (Senter & Hatfield, 2016). Overall, there are limited data discussing the NP role specifically in high-risk clinics.

Limitations

The current analysis reveals limitations, with generally low-quality evidence and a lack of randomized controlled trials. This review is also limited because of a lack of diverse study populations, because only two studies investigated risk assessment in Hispanic and African American females (Jiang et al., 2019; Schwartz et al., 2021). Additional nursing and multidisciplinary research are needed with diverse populations because a majority of trials represented primarily White participants (Abdolell et al., 2020; Amornsiripanitch et al., 2017; Himes et al., 2019; Xie et al., 2019).

Implications for Practice

Breast cancer risk assessment in primary care and mammography settings can identify women at increased risk and is a pathway to promote supplemental screenings and genetic counseling. Women's health nurses are well positioned to address this need because they are skilled in taking a comprehensive view of each patient with a focus on health promotion and education. Nurses in clinics can verbally collect risk assessment data and use these tools as part of a patient's assessment. Alternatively, patients can provide risk assessment data during the check-in processes. In particular, the Gail model is recommended as a free, Web-based instrument that can be completed in a few minutes. Embedding a risk assessment tool in the EHR would require institutional support; however, this would streamline this process in busy ambulatory clinics. For those with lifetime risk of >20%, nurses can provide educational resources, and providers should further explain their risk and management recommendations. Patient-centered discussions should include options for screening mammography, breast self-awareness, breast MRIs, or other supplemental imaging as well as genetic counseling and testing.

Nursing leaders can translate evidence regarding risk assessment into practical interventions for patients and interdisciplinary teams. Advanced practice nurses can influence decisions regarding the choice of risk assessment tool and implementation of a process for risk assessment in ambulatory settings. NPs in specialty breast clinics provide expert care for high-risk women. However, not all high-risk women can access a specialty breast provider or genetic counselor because of geographic, financial, or other limitations. Nurses should anticipate and advocate for ways to overcome barriers to high-risk screenings and genetic counseling and testing. Offering financial counseling and cost transparency is one avenue to facilitate this goal. All health care providers must promote women's health through knowledge of risk assessment models, personalized breast cancer screening recommendations, and referrals to high-risk breast specialists, where available.

> Successful implementation of breast cancer risk assessment in busy ambulatory clinics requires tools that are quick and easy to use

Nursing research is needed to refine available risk assessment tools and develop new instruments and processes to individualize care for women. Breast cancer risk assessment is recommended for all women by age 25 years (NCCN, 2022b). However, evidence is lacking regarding the established interval for how often risk assessment scores should be recalculated. Traditional nursing research and quality improvement work are needed to define the optimal risk assessment tool, the ideal interval for administration, and best practices in ambulatory settings.

Conclusion

This review of the literature highlights emerging evidence in outpatient clinic and breast imaging facilities to appropriately identify and manage women at elevated risk. There are continued barriers affecting this population, and therefore, individualized breast cancer screening plans are not always optimized. Nurses can serve as patient advocates by being knowledgeable about risk assessment tools and can engage women in discussions and shared decision-making to help tailor their breast cancer screening plans.

Supplementary Materials

Note: To access the supplementary material that accompanies this article, visit the online version of *Nursing for Women's Health* at http://nwhjournal.org and at 10.1016/j.nwh.2022.12.006.

Author Disclosures

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Posttest Questions

Instructions: This learning activity is free for AWHONN members and available for purchase by nonmembers. To access it, visit the AWHONN store at https://awhonn.org/awhonn-store/ and type NWH into the search box.

1. Which of the following breast cancer risk assessment models captures only first-degree relatives in family history of disease? (Select all that apply)

   a. Breast Cancer Risk Assessment Tool (BCRAT)
   b. Breast Cancer Surveillance Consortium Risk Calculator (BCSC)
   c. Claus risk assessment model
   d. Ontario Family History Assessment Tool (Ontario FHAT)

2. Which interventions are recommended to increase individualized women's care within primary care and mammography settings? (Select all that apply)

   a. Breast cancer risk assessment integration
   b. Patient-centered discussions
   c. Self-breast examination

3. Which of the following is the preferred method of communication of screening results for women at high risk?

   a. Oral communication
   b. Written and oral communication
   c. Written communication

4. According to the authors, which of the following strategies promote individualizing care for women who are at risk for breast cancer? (Select all that apply)

   a. Attain knowledge of risk assessment models
   b. Provide personalized breast cancer screening recommendations
   c. Refer at-risk patients appropriately to high-risk breast specialists

5. At what age does the National Comprehensive Cancer Network [NCCN] recommend women start using a breast cancer risk assessment?

   a. 20 years
   b. 25 years
   c. 35 years
   d. 40 years

6. Which of the following recommendations should be considered for women who are at high risk of developing breast cancer? (Select all that apply)

   a. Increasing clinical visits to every 6 to 12 months and facilitating shared decision-making on risk reduction strategies
   b. Instructing patients to perform frequent self-breast exams as a screening method
   c. Referring to genetics specialists, screening mammograms, or magnetic resonance imaging (MRI)

7. Which of the following breast cancer risk assessment models should be limited to women who are 35 and older? (Select all that apply)

   a. Breast Cancer Risk Assessment Tool (BCRAT)
   b. Breast Cancer Surveillance Consortium Risk Calculator (BCSC)
   c. Claus risk assessment model
   d. IBIS Breast Cancer Risk Evaluation Tool

8. According to the authors, further research on breast cancer risk assessment is needed for which of the following underserved populations? (Select all that apply)

   a. African American women
   b. Hispanic women
   c. White women

9. The breast cancer risk assessment model most frequently utilized within ambulatory care settings is:

   a. Breast Cancer Risk Assessment Tool (BCRAT)
   b. Breast Cancer Surveillance Consortium Risk Calculator (BCSC)
   c. Breast & Ovarian Analysis of Disease Incidence and Carrier Estimation Algorithm (BOADICEA)
   d. IBIS Breast Cancer Risk Evaluation Tool

10. According to the National Comprehensive Cancer Network [NCCN] guidelines (2022), routine clinical breast cancer screening should include which of the following? (Select all that apply)

    a. Conducting a breast cancer risk assessment
    b. Performing a clinical breast exam
    c. Reviewing a woman's medical and family history

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