Knowledge Regarding Breast Self-Examination Among Women Attending General Outpatient Departments

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Abstract — Assessment of knowledge on breast self-examination should go hand-in-hand with breast changes awareness, proper help seeking behavior, and understanding of screening limits. This manuscript outlines a framework for such an assessment based on a hospital setting cross-sectional design targeting women ages 18-65 who attend general outpatient departments. The simulated analytical sample includes 300 women evaluated using a questionnaire including 12 questions. Correct answers receive 1 point and result in scores ranging from zero to twelve. The mean score equals 5.20 and 46.0%, 36.0% and 18.0% are low, middle, and high scorers, respectively. Awareness of breast self-examination before this study is reported by 64.0%, however, only 32.0% know that scheduled self-examination is not proven to reduce breast cancer mortality. Being previously educated on breast health is linked with scores of six points and above, with unadjusted prevalence ratio 1.77 (95% confidence interval: 1.46-2.15). Simulated results illustrate a consistent framework rather than empirical results. Knowledge assessment should focus on accurate breast health knowledge without promoting self-examination as an alternative to appropriate clinical evaluation and screening.

Keywords — Breast self-examination, breast awareness, knowledge assessment, women, outpatient departments, health education

Introduction

Breast health education can help women understand changes and recognize the necessity to seek professional evaluation. However, awareness of the concept of breast self-examination does not necessarily equate with correct understanding of its purpose, limits and link with other detection methods. A woman may have heard about self-examination and believe erroneously that having a self-exam performed regularly rules out breast cancer.

Scheduled breast self-examination involves a structured approach to inspection and palpation of breasts. Breast awareness is a wider concept and includes being familiar with the normal look and feel of breasts and recognizing changes.

These should be considered distinctly when developing the questionnaire and interpreting scores.

The American Cancer Society notes that breast self-examination is not sufficient as a screening tool and encourages women to be familiar with the normal look and feel of breasts and report changes [1]. Its guidelines provide an important context for assessment although the screening policies should also follow the relevant national recommendations and individual risks.

General outpatient departments offer an opportunity to assess knowledge among women who visit for a variety of health issues. However, attendants of outpatient clinics represent healthcare-seeking population and cannot be considered representative of the surrounding community.

The current research framework focuses on assessing understanding of self-examination, recognition of possible breast changes and awareness of proper response. In addition, the study framework investigates the associations between education, residence and prior breast health education. The purpose of the research is to uncover educational needs rather than promote a specific schedule for self-examinations.

Literature Review

Awareness of breast cancer in India

Gupta, Shridhar, and Dhillon [2] outlined the differences in breast cancer awareness among Indian women. The results are important since they confirm the necessity to assess different domains of knowledge rather than consider women as well-informed just because they know about the existence of the disease.

Dey et al. [3] investigated the community-level awareness of breast cancer among women in Delhi. The study highlights the importance of locally grounded assessment and the lack

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of assumption that exposure to general health information leads to complete understanding.

The further research by Dey et al. [4] focused on awareness, preventive behavior, and barriers to early detection. The example demonstrates why separate knowledge and actions should be assessed as the fear, competing priorities and access-related barriers can affect help-seeking even if the women are aware of the breast changes.

Evidence on scheduled self-examination

Thomas et al. [5] conducted a large randomized trial on breast self-examination in Shanghai. Extensive instructions did not result in reduction of breast cancer mortality. The evidence is important for the development of a questionnaire as the instrument should not award the score for an unproven assertion that regular self-examination necessarily saves lives.

Kösters and Gøtzsche [6] reviewed randomized evidence on regular self-examination and clinical examination. The review concludes with no mortality benefits from the teaching of regular self-examination and additional investigations of benign cases. The findings are related to scheduled self-examination as a screening method, not to self-reporting a newly discovered change.



This difference is educationally important. Encouragement of proper evaluation and discouragement of unwarranted reassurance can go together with the explanation of the limitations of scheduled self-examination.

Early diagnosis and service access

Public awareness is presented in the WHO Guide to Cancer Early Diagnosis [7] as an aspect of the pathway that also involves accessibility of assessment, diagnosis, and treatment. Information is not enough when services are inaccessible or late referral happens.

Similarly, in the Global Breast Cancer Initiative implementation framework [8], the link is made between health promotion and timely diagnosis and comprehensive management. The framework supports educational programs that teach where to seek help, rather than just informing about the condition without a service pathway available. WHO (who.int)

Awareness measurement accuracy

The Linsell et al. [9] validation study of breast cancer awareness tool demonstrated that awareness is a concept which requires measurement, including both symptom recognition and information acquisition. Selection and adaptation of some of the ideas into the questionnaire does not entail validation of the original instrument.

A randomized study by Linsell et al. [10] on promoting early presentation among older women was conducted to demonstrate that it is feasible to assess educational impact, but the study population is limited due to the older age group of participants.

Review by O'Mahony et al. [11] describes the interventions aimed at breast cancer awareness. This review underscores the difference between increasing knowledge and achieving clinical outcomes. Higher score on the questionnaire does not necessarily mean lower cancer-related mortality.

Difference between self-examination and clinical examination

The Mittra et al. [12] randomized trial evaluated the efficacy of clinical breast examination screening in Mumbai. This intervention involved health workers and it differs fundamentally from the self-examination program. Its results cannot be used to prove efficacy of an uncontrolled self-examination.

Research gap

The practical gap is that of the need for outpatient evaluations which would allow measuring the correct knowledge without reinforcing outdated screening messages. The proposed instrument will combine the idea of self-examination with recognizing changes, seeking help, and understanding limitations.

Objectives

Primary objective is to describe knowledge about breast self-examination and related breast awareness concepts among women attending general outpatient departments.

Secondary objectives are to identify item-specific misconceptions, describe self-reported exposure to education and checking, and analyze unadjusted associations between knowledge scores and certain characteristics.

Hypotheses

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Null hypotheses are that the proportion of people with at least six points does not differ depending on educational level, prior structured breast health education, residence, and age group.

These associations are exploratory. Primary aim of this research is to assess knowledge descriptively.

Materials and Methods

Study design and population

A hospital-based cross-sectional survey is proposed among women aged 18 to 65 attending the specified general outpatient clinics. The eligible population would consist of any women, regardless of their complaint.

The patients who need urgent care and accompanying people who are not attendees will be excluded from the sampling frame. Women with current breast symptoms will remain eligible, with separate clinical evaluation arranged where necessary.

Simulated analytical sample consists of 300 complete assessments. No hospital identification, data on recruitment periods, response rate, or completed field work is provided.

Sampling procedure

A systematic sample would be drawn from the eligible registration lists in different days and sessions of the clinic visits. Sampling interval would take into account the expected attendance, with the randomly selected start point.

Unique identifiers would ensure no duplicate sampling. Invitations, refusals, exclusions, and incomplete surveys would be recorded to assess selection and non-response.

Sample size calculation

Assuming that the proportion is 50% unknown, the confidence level is 95%, and absolute precision is 6 percentage points:

$$n = \frac{1.96^2(0.50)(0.50)}{0.06^2} \approx 267.$$

The sample of 300 complete responses exceeds this minimum needed for simple random sample. 334 invitations would be needed if 10% non-response is expected. In case of clustered or unequal probability sample more respondents are needed.

Questionnaire development

The proposed questionnaire consists of twelve items on the meaning of self-examination, awareness of usual appearance, recognition of changes, seeking help, and screening limitations.

Prior to implementation of the questionnaire, it would need to be checked by the breast health clinicians, nursing educators, and measurement specialists. The cognitive interviews would be done to assess comprehension, followed by piloting and appropriate reliability and validity assessment.

No expert agreement index, reliability coefficient, and validation are claimed. The instrument is researcher developed and it must not be considered as validated scale.

The questions would use plain language and include "unsure" option. The interviewer would read a standardized script without correcting teaching until assessment is done.

Scoring

Each correct answer would get one point; each incorrect and "unsure" answer would get zero. Scores range from 0 to 12.

The prespecified descriptive categories would be:

Lower score: 0-5.

Intermediate score: 6-8.

Higher score: 9-12.

For exploratory comparison purposes, the intermediate and higher categories would be combined as at least 6 points. These are analytical decisions, not validated cut-off scores for clinical competence.



Additional covariates

Age would be grouped into 18-29 years, 30-44 years, and 45-65 years. Education would group those who had completed secondary school or beyond and those below this education level. Residence would be defined based on whether the participant had recorded urban or rural residence.

Previous structured breast health education would be defined as an identifiable teaching conducted by a health professional

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or a program. Media exposure would be captured independently.

Checking practices would be measured independent of knowledge. Neither checking practices nor performance in the questionnaire would measure skills in breast checking.

Ethical considerations

Real study would involve ethics clearance, informed consent, confidentiality, and safe data storage. The interview would not involve the breast being exposed to or checked.

Participants with new breast problems would be directed to an appropriate pathway. Correcting information would be given after the questionnaire without the implication that planned self-checking replaces screening.

Statistical analysis

Number and percentages characterize responses. The total average score would be calculated by adding correct answers for all items and dividing by 300.

The Wilson 95% confidence interval gives the proportion who had scored at least six. Pearson's Chi-square test compares categorical distributions while prevalence ratio with confidence intervals on log scale compares categorical proportions.

No adjusted regression, psychometrics or association of knowledge with diagnostic results was reported because participant-level observation was lacking.



Results

Overall knowledge distribution

Table A. Simulated knowledge-score categories

Score category	Score range	Women, n	Percentage
Lower	0–5	138	46.0%
Intermediate	6–8	108	36.0%
Higher	9–12	54	18.0%
Total	0–12	300	100.0%

Overall, 162 women score at least six, corresponding to 54.0% (95% CI: 48.3%–59.6%). The mean score is 5.20 out of twelve. No standard deviation is supplied because the aggregate item counts do not determine individual score variability.

Item-specific knowledge

Table B. Simulated correct responses to proposed knowledge items

Knowledge statement assessed	Correct responses, n	Percentage
Identifies self-examination as checking one's own breasts	168	56.0%
Recognizes the value of knowing usual appearance and feel	192	64.0%
Recognizes a new breast lump as requiring assessment	174	58.0%
Recognizes new skin dimpling as a concerning change	150	50.0%
Recognizes new nipple inversion as potentially important	138	46.0%
Recognizes spontaneous bloody nipple discharge as requiring assessment	126	42.0%
Knows an underarm lump may warrant assessment	114	38.0%
Knows breast cancer can occur without breast pain	102	34.0%
Knows a normal self-check cannot exclude cancer	84	28.0%
Knows self-examination does not replace recommended screening	72	24.0%

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Knows scheduled self-examination has not demonstrated a mortality reduction	96	32.0%
Knows a new concerning change warrants clinical assessment without waiting for a scheduled self-check	144	48.0%

The table contains 1,560 correct responses across 3,600 possible responses. Dividing 1,560 by 300 produces the mean score of 5.20.

Recognition is higher for general familiarity and lumps than for screening limitations.

Awareness and reported practices

Table C. Simulated exposure and behaviour indicators

Indicator	Women, n	Percentage of 300
Previously heard of breast self-examination	192	64.0%
Received structured breast-health education	100	33.3%
Ever deliberately checked their breasts	84	28.0%
Reported checking during the previous three months	54	18.0%

These indicators overlap and must not be added. Recent checking is included within ever checking. Reported frequency does not establish technique, diagnostic accuracy, or health benefit.

Associations with knowledge

Table D. Simulated characteristics associated with scoring at least six

Comparison	Scoring ≥6 in first category	Scoring ≥6 in reference category	Prevalence ratio (95% CI)	p-value
Secondary education or higher vs. below secondary	118/180 (65.6%)	44/120 (36.7%)	1.79 (1.38–2.31)	<0.001
Previous structured education: yes vs. no	76/100 (76.0%)	86/200 (43.0%)	1.77 (1.46–2.15)	<0.001
Urban vs. rural residence	108/180 (60.0%)	54/120 (45.0%)	1.33 (1.06–1.68)	0.011

In each of the comparisons, 162 women achieving six or more are included.

The respective proportions in terms of age are 50/100, 70/120, and 42/80. The age comparison is not statistically significant, \(\chi^2(2)=1.62\), \(p=0.444\).

Discussion

The observed pattern makes a difference between knowing about breast self-examination and understanding its limitations. About two-thirds know the term, but fewer realise that no normal self-examination can rule out breast cancer or replace recommended screening.

This difference is crucial because education could unwittingly give false security. Learning how to examine one's breasts without learning about the limitations of the examination increases memory for instructions, but not the knowledge of the actual limitations.

More knowledge of lumps than knowledge of other signs mirrors the uneven awareness observed in India [2–4]. Nevertheless, similarity to real-world data does not confirm the simulated results or the knowledge level in any hospital.

Structured education in the past was associated with unadjusted higher scores. This does not confirm the efficacy of the intervention. Educated women might be different in education, access to healthcare, interest in the topic, or breast problems in the past.



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There is conceptual overlap between education and residence associations as well. Urban residence may correlate with education, service access, and media exposure. Without participant-level adjustment, the analysis cannot separate the independent effect of each factor.

Self-reported checking should not be used as the primary success indicator. There is randomized evidence that more often scheduled self-examinations [5,6] cannot be generalized to mean improved outcome. The emphasis on education should be placed on recognition, appropriate reporting, and the nature of screening choices.

The broad nature of the questionnaire proves to be both helpful and problematic. It includes knowledge not associated with the technique, yet the overall score is an aggregation of all domains. A woman can score quite high in the overall score but still have a critical misconception. Reporting the item-level response is crucial.

For outpatient services, the real finding can be used to inform short educational sessions and referral information. WHO guidelines [7,8] show that any awareness activities must be linked to assessment accessible. Gains in knowledge cannot prove early diagnosis or reduced mortality.

Limitations

All numerical results are simulated and cannot provide empirical estimates of outpatient knowledge.

The questionnaire requires validation, and category cut-offs are researcher-defined. The interview itself might suffer from social desirability or interviewer effect. Previous educational and checking behaviors are subject to recall bias.

Cross-sectional design does not allow for estimation of the education's impact. Those attending facilities may differ from those who do not attend the facilities. No demonstration-based skill assessment, verification of screening use or measurement of outcomes is provided.

Conclusion

Knowledge assessment regarding breast self-examination must include breast awareness, recognition of changes, appropriate seeking for help, and the limitations of screening. Simulated tables offer consistent reporting framework. Real conclusions need to be based on the real responses and should not treat frequency of self-examination or the score as evidence of cancer prevention or reduced mortality.

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