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General Practitioners' Perspectives on Identifying Early Symptoms for Breast Cancer Detection in the Primary Care Facilities: A Case Study

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Abstract

In primary care settings, general practitioners (GPs) frequently face challenges in identifying the early symptoms of breast cancer. This study aimed to explore, in depth, the perspectives of GPs regarding the identification and interpretation of early-stage breast cancer symptoms during the early detection process in primary care facilities. This study used a qualitative approach based on a case study. Data were collected through in-depth interviews with GPs at primary health care and private clinics in Depok City, Indonesia, complemented by observations and documentation. The data was analyzed using the Miles and Huberman method. The questionnaire assessment and focus group discussion findings revealed that only 3.8% of GPs demonstrated good responses of understanding early and late-stage breast cancer symptoms. Most participants (82.7%) provided fair responses, whereas 13.5% provided poor responses, indicating significant gaps in clinical understanding and highlighting the need for improved training and clearer diagnostic guidance. In conclusion, GPs in primary care facilities tend to have general knowledge of breast cancer but lack the ability to distinguish specific early-stage symptoms from those of more advanced stages.

Keywords: breast neoplasm, early detection, primary care

Introduction

Breast cancer is one of the leading causes of cancer-related mortality among women worldwide, including in Indonesia. Data from the Global Cancer Observatory 2020 indicate a breast cancer mortality rate of 6.8%. In Indonesia, the mortality rate is higher, reaching 9.3%, surpassing that of cervical cancer.[1] Although early detection strategies, such as breast self-examination or "*Periksa Payudara Sendiri*," (SADARI) and clinical examinations by health professionals, are available, a substantial proportion of breast cancer cases continues to be diagnosed at an advanced stage, particularly in the primary care facilities. One of the main contributing factors is the inaccuracy in identifying early symptoms, which are often nonspecific and misinterpreted as signs of late-stage disease. At the frontline of service delivery, general practitioners (GPs) play a crucial role in the initial detection process. However, studies have indicated challenges GPs face in detecting early signs of malignancy in PHCs.[2,3] Misinterpretation of early symptoms frequently results in delayed referrals and suboptimal clinical management. Therefore, a deeper understanding is required of how GPs interpret and identify early symptoms within their clinical environments.

Global literature emphasizes that GPs play a vital role in recognizing early cancer signs, including breast cancer, given that they are often the first point of patient contact within the health system.[4] However, several existing theories and clinical guidelines remain normative and overlook the realities faced in practice, particularly in under-resourced primary care settings. A study by Abda *et al.* found that GPs are generally aware of ministerial circular for generalizing breast cancer screening.[5] This shows a disconnect between knowledge and practice. Moreover, available guidelines of breast cancer management often fall short of addressing how diagnostic uncertainty affects clinical decision-making among GPs. In this context, a qualitative understanding of GPs becomes essential to determine the gap between ideal theory and practical realities, and to evaluate the applicability of clinical guidelines within the primary care system.[4-6]

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The urgency of this study rests on two critical premises: first, the high incidence of delayed breast cancer diagnoses owing to failure in recognizing early symptoms; and second, the absence of in-depth qualitative studies exploring how GPs perceive and respond to breast cancer symptoms in clinical practice. The previously presented facts indicate that the role of GPs has not yet been adequately supported by training systems and clinical guidelines that reflect the realities of fieldwork.[7] At the same time, the literature shows significant potential for GPs to play a more active role in early detection, if supported by the right systems and context-sensitive understanding of the social and clinical conditions of patients.[8] Therefore, this study is crucial for bridging the gap between theory and practice while producing empirical evidence grounded in the local context, which can inform health policy and capacity-building efforts, particularly in strengthening early detection of breast cancer in frontline health care services.

GPs experience a complex phenomenon during the process of identifying early symptoms of breast cancer within primary care services. The phenomenon reflects a disconnect between the clinical knowledge acquired during undergraduate medical training and the realities of day-to-day practice, particularly in distinguishing early-stage from late-stage breast cancer symptoms. In the context of primary care, GPs serve as the frontline providers responsible for the early detection of a broad spectrum of illnesses, including breast cancer. However, in practice, they are often confronted with resource limitations, high workloads, and ambiguous patient complaints. As a result, early symptoms of breast cancer, which are often nonspecific, tend to be overlooked or misinterpreted. This issue warrants deeper investigation as it has a direct impact on delayed diagnosis and diminishes the effectiveness of referrals to secondary or tertiary care. The phenomenon also highlights the absence of clinical support systems or the underutilization of available diagnostic tools by GPs in primary care settings, making clinical decisions regarding breast cancer symptoms largely subjective and dependent on individual experience.

This study aimed to explore, in depth, GPs' perspectives on the identification and interpretation of early-stage breast cancer symptoms during the early detection process in primary care facilities; it also sought to understand how they distinguish between early- and advanced-stage symptoms in real-world clinical settings. This study focused on health providers and their in-depth perspectives on providing care to breast cancer patients, in contrast to existing studies that examine other factors, such as patients and health care institutions. The geographical focus of this study is Depok City, Indonesia. Depok is an urban area with diverse primary care characteristics: some regions are near the metropolitan city of Jakarta, whereas others are in more remote areas where the only available health facility is a primary health care (PHC) with no private clinics. This condition leads to various GP profiles that differ not only in their experience level but also in their medical knowledge. Using a qualitative approach, this study seeks to uncover subjective experiences, clinical judgments, and systemic barriers faced by GPs in their daily practice. The findings were expected to contribute to the development of context-specific policies, training modules, and interventions to enhance the effectiveness of early breast cancer detection in PHCs.

Method

This study employed a qualitative case study design to explore the experiences of GPs in identifying early symptoms of breast cancer in primary care facilities. The design was chosen to enable in-depth exploration of real-life clinical challenges faced by GPs. Data were collected through focus group discussions (FGDs) involving 52 GPs from 18 PHCs and 34 private clinics in Depok City, Indonesia. The FGDs were conducted during a World Cancer Day event on February 16, 2025. The researcher who conducted and led the FGD is a consultant in oncologic surgery with over 10 years of experience in the diagnosis and treatment of breast cancer.

A total of 52 GPs practicing at primary care facilities of Depok City participated in the study. The participants ranged in age from 26 to 58 years. Of these, 18 medical doctors working in PHCs had clinical experience ranging from 1 to 15 years, whereas 34 doctors based in clinics had experience ranging from 1 to 20 years. A total of 51 GPs completed the questionnaire, while one medical doctor did not (Table 1). Before the discussion, participants completed a questionnaire to assess their baseline understanding of early versus late-stage breast cancer symptoms. This simple questionnaire consisted of two questions for participants to describe the signs and symptoms of early and advanced breast cancer that they know. The responses served as a trigger and guidance for the FGDs, which were conducted in small groups. The discussions focused on participants' clinical reasoning, diagnostic practices, and perceived barriers in early detection.

Table 1. General Practitioners' Characteristics

Code	Age (years)	Workplace	Evaluation
1	33	Primary health care	Fair
2	34	Primary health care	Fair
3	35	Private clinic	Fair
4	30	Private clinic	Fair
5	52	Private clinic	Fair
6	27	Private clinic	Fair
7	44	Private clinic	Did not answer
8	27	Private clinic	Fair
9	31	Private clinic	Fair
10	26	Private clinic	Fair
11	30	Private clinic	Fair
12	33	Primary health care	Fair
13	34	Private clinic	Fair
14	36	Primary health care	Fair
15	32	Private clinic	Fair
16	33	Primary health care	Fair
17	36	Private clinic	Fair
18	33	Private clinic	Fair
19	45	Private clinic	Fair
20	31	Primary health care	Fair
21	27	Primary health care	Fair
22	40	Private clinic	Poor
23	39	Primary health care	Fair
24	43	Private clinic	Fair
25	38	Private clinic	Fair
26	46	Private clinic	Fair
27	41	Private clinic	Fair
28	34	Private clinic	Fair
29	43	Primary health care	Fair
30	41	Primary health care	Poor
31	34	Private clinic	Fair
32	30	Private clinic	Fair
33	43	Private clinic	Poor
34	31	Primary health care	Poor
35	37	Primary health care	Poor
36	31	Primary health care	Fair
37	42	Private clinic	Fair
38	40	Primary health care	Fair
39	44	Primary health care	Fair
40	29	Private clinic	Fair
41	58	Private clinic	Poor
42	26	Private clinic	Fair
43	31	Private clinic	Fair
44	51	Private clinic	Fair
45	44	Primary health care	Good
46	44	Primary health care	Fair
47	36	Private clinic	Fair
48	50	Private clinic	Fair
49	43	Primary health care	Fair
50	33	Private clinic	Good
51	47	Private clinic	Poor
52	26	Private clinic	Fair

Discussions were conducted directly and openly within prearranged focus groups designed to guide the dialogue on key themes while still allowing participants to share their personal experiences. All data collection procedures were conducted in strict adherence to ethical research principles, including obtaining informed consent from all participants and ensuring the confidentiality of their identities. The data analysis in this study employed the interactive model of analysis developed by Miles and Huberman (Figure 1), consisting of four primary stages: data collection, data condensation, data display, and conclusion drawing/verification.[9] This analysis model was used for qualitative data because of its simplicity, considering that it was easy to understand.

The analytical process began with the reduction of raw data obtained from questionnaires and FGDs, involving the selection, focusing, and simplification of information relevant to the research objectives. The next stage involved presenting data in the form of matrices, thematic narratives, or conceptual maps to facilitate the identification of patterns, the alignment of concepts, and key findings. Subsequently, preliminary conclusions were drawn and repeatedly verified through a data triangulation process. The triangulation technique used in this study encompassed source

triangulation by comparing information derived from questionnaire responses, discussion outputs, and established medical literature.

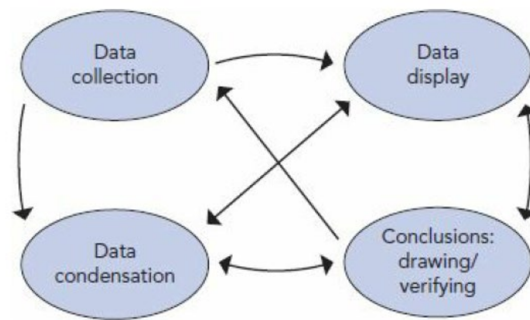

Figure 1. Interactive Model of Analysis by Miles and Huberman[9]

The responses of the participants were categorized as "Good," "Fair," or "Poor." A response was categorized as "Good" if the practitioner correctly identified the early symptom and at least three advanced symptoms. A "Fair" rating was assigned if the early symptom was identified but incomplete, and the practitioner correctly recognized fewer than three advanced symptoms. A response was rated as "Poor" if the early symptom was incorrectly identified, and the advanced symptoms were incorrectly or not identified.

The correct early symptoms of breast cancer was painless lump in the breast. In contrast, advanced symptoms have a broader range of clinical manifestations, including axillary lump, nipple retraction (inward pulling of the nipple), dimpling (skin indentation resembling a dimple), *peau d'orange* (orange peel-like skin appearance), breast edema, breast erythema (redness), and the presence of ulceration (open sore) on the breast skin. These seven clinical signs were selected as the most commonly observed symptoms in advanced breast cancer.[10]

Categorization of data aimed to ensure the validity and reliability of the data obtained. Accordingly, this analytical technique not only provides a structured approach to managing qualitative data but also enables in-depth interpretation of the dynamics and complexity of GPs' experiences in detecting early breast cancer symptoms in primary care settings.

Results

Based on the questionnaire result, the most common early symptom recognized by GPs was the presence of a lump in the breast; however, the majority described the lump as being accompanied by pain, whereas only a small proportion described it as painless. Regarding advanced-stage symptoms, none of the practitioners were able to list all the hallmark signs completely. Most were able to mention two to three symptoms, while a small number failed to provide any answer.

Based on the FGD results, only two GPs (3.8%) received a Good rating: one from the PHC and one from a private clinic. The informant from PHC accurately and thoroughly described early symptoms and listed five late-stage symptoms, while the informant from a private clinic correctly identified early symptoms and mentioned three late-stage indicators. Most responses were rated as Fair (82.7%). For instance, GP number 1 mentioned that an early symptom was a lump in the breast, whereas advanced symptoms were lump enlarges, pain, changes in skin color and texture, and pus or blood coming out of the nipple. This informant mentioned that early symptoms included a lump in the breast but did not mention a painless lump, and provided only one correct advanced symptom. Another example was GP number 31, who mentioned early symptoms to be palpable lump, non-moving, hard, diffuse surface. This informant could only answer about early symptoms but did not mention a painless lump; also the informant could not answer about advanced symptoms. Another example was GP number 17, who could correctly answer about early symptoms but not about advanced symptoms.

A Poor rating was given to seven informants (13.5%) who were unable to describe either early or late-stage symptoms correctly, gave inaccurate responses, or failed to answer altogether. For instance, the GP number 10 only answered about a breast lump in early symptoms with no answer regarding advanced symptoms. Another example was GP number 44, who answered that the early symptoms included a lump that was not influenced by menstruation cycle; the informant gave no answer regarding the advanced symptoms. Moreover, this informant gave the wrong answer regarding the early symptoms (Table 2).

Table 2. Interpretation of the General Practitioners' Perceptions on Early and Advanced Breast Cancer Symptoms

Category	Definition	Frequency (N)	Percentage (%)
Good	Correctly identify the early symptoms and at least three advanced symptoms	2	3.8
Fair	If the early symptom was identified but incomplete, and fewer than three advanced symptoms were correctly recognized	43	82.7
Poor	If the early symptom was incorrectly identified and the advanced symptoms were incorrectly or not identified	7	13.5

The GPs in PHC tended to have general knowledge of breast cancer but lack the ability to distinguish specific early-stage symptoms from those of more advanced stages. Observations indicated that informants often blended early and late-stage symptom descriptions. Documentation also revealed an absence of visual or written guidelines explicitly differentiating symptoms by stage. Early symptoms were often perceived as painful solitary lumps. However, in clinical reality, painful lumps prompted patients to seek medical attention quickly, whereas in early-stage breast cancer, patients tended to delay visits owing to the absence of pain. This key information must be communicated clearly to patients to reduce delays in diagnosis. Early diagnosis enables earlier treatment, and patients diagnosed at an early stage of breast cancer generally have significantly better survival rates. These findings indicated that GPs' understanding of early breast cancer symptoms must be supported by regular updates, case-based education, and ongoing clinical training.

Discussion

The findings of this study revealed that GPs in primary health care facilities tend to have a limited and inconsistent understanding of the early and advanced symptoms of breast cancer. Early symptoms, such as the presence of a lump, are often perceived broadly without clear clinical differentiation. This study revealed that most GPs described a lump as being accompanied by pain. In fact, breast pain is uncommon in either benign or malignant tumors. Typically, pain is associated with fibrocystic breast disease, which manifests as cystic formations before or during menstruation and tends to subside once menstruation ends. In breast cancer, pain usually appears in the late stages, when the breast becomes swollen, reddened, and develops ulcerations, which can irritate subcutaneous nerves.[8] Early detection is more commonly conducted reactively, triggered by patient complaints, rather than through a systematic clinical screening process. Uncertainty in distinguishing symptoms often prompts rapid referrals, bypassing adequate initial diagnostic efforts.[11,12] This observation was reinforced by the fact that primary care settings lack practical guidelines and structured training to support GPs in early detection decision-making. Consequently, the knowledge and practice of GPs were still largely shaped by personal experience and patient-reported symptoms, rather than by evidence-based clinical support systems.[13,14]

In the context of global literature, this study addressed a critical gap in understanding breast cancer detection in primary care facilities. Tshabalala *et al.* conducted a qualitative study in Johannesburg, South Africa, and found that physicians and nurses in primary care settings reported receiving insufficient oncology-related training from health authorities.[15] Furthermore, they lacked competencies in early cancer detection and had limited access to screening guidelines. As a result, clinical decision-making often relied on personal perceptions, and patients predominantly sought curative rather than preventive care services.[15] In addition, this study highlighted that even in urban areas such as Depok City, where access to health facilities and information is relatively better, similar barriers persisted because of the lack of a standardized early detection system. Although GPs often express positive attitudes toward breast cancer screening, a previous study by Karavska *et al.* reported that their practices did not consistently reflect these attitudes. In their study of primary care physicians in Ukraine, they found that more than half recognized the value of screening; however, many did not regularly perform or refer for clinical breast exams due to a lack of confidence, training, or systemic support.[16] The strength of this study lies in its qualitative focus on the subjective dimension of clinical experience, enabling a deeper understanding of diagnostic uncertainty and the systemic factors that influence the decision-making of GPs.

Reflecting on these findings, it becomes evident that mapping GPs' perspectives is not only about collecting opinions but also a strategic step toward evaluating the primary care system's readiness to address the growing burden of chronic illnesses such as cancer. By uncovering the practical and psychological challenges GPs face in identifying early breast cancer symptoms, this study fulfilled its core aim: to identify the perceived barriers and influencing factors in early

detection capacity. In addition, the absence of systematic clinical training and guidelines for early breast cancer detection in Indonesia may contribute to the limited perspective and understanding among practitioners.[14,17]

The primary implication of this study was the urgent need to reformulate early breast cancer detection policies that focus not only on technologies, such as ultrasound or mammography, but also on strengthening human resources at the primary care level. The results provided empirical evidence that top-down screening campaigns remain insufficient without GP engagement and enhanced clinical capacity. Interview and observational data indicate that repeated training, updated clinical knowledge, and the presence of practical guidelines are essential to reduce reliance on intuition and subjective experience.[18-19] This study offered a strong foundation for developing case-based training modules that combine clinical and patient communication components to enhance the accuracy and confidence of GPs in recognizing early signs of breast cancer in real-world settings.

This study offered a meaningful contribution to the advancement of public health science, theoretically and practically. Theoretically, it expanded the understanding of diagnostic limitations at the primary care level, particularly in the context of cancer as a chronic disease requiring early detection, grounded in clinical experience. This study showed that the success of early detection was not solely determined by the availability of equipment and information but also by physicians' subjective perceptions and confidence in their own diagnostic abilities. In practice, the findings served as a critical reference for the development of real-case-based early detection training modules and the formulation of standard operating procedures (SOPs) in primary care facilities.[20,21] Through its in-depth qualitative approach, this study opens new avenues for health policy discussions grounded in context-specific evidence that is humanistic and applicable.

The findings indicated that diagnostic uncertainty and limitations in early detection among GPs could be understood as the outcomes of intersecting structural, educational, and psychological factors. Structurally, primary care systems lacked optimal support in the form of SOPs or standardized breast examination protocols. From an educational perspective, breast cancer training at the GP level tends to be theoretical and lacks hands-on clinical components. Psychologically, fear of misdiagnosis and limited consultation time contribute to a defensive attitude, characterized by rapid referrals or dismissal of mild complaints.[22,23] Documentation further showed that there was no feedback mechanism or regular evaluation of early detection competencies in primary care. These conditions push GPs toward minimal intervention, effectively transferring full diagnostic responsibility to secondary services.[19,24]

Based on these findings, three key areas of intervention must be addressed: education, health service systems, and policy. At the educational level, simulation-based training focused on breast examination and stage-specific symptom differentiation must be developed and integrated into continuous professional development programs. At the service level, standardized protocols for history-taking and routine breast examinations, including systematic inspection and palpation, must be implemented across primary care facilities. From a policy standpoint, the Indonesian Ministry of Health and regional health departments need to develop adaptive national guidelines for early breast cancer detection, tailored to the capacities of primary care infrastructure and local contexts. This study provided a robust empirical foundation for policy and intervention design; it can serve as a reference for strategic planning to strengthen early-detection-based health services in Indonesia.

While this study successfully explored the in-depth perspectives of GPs, it was not without its limitations. First, the scope was geographically limited to Depok City and to a specific category of informants from certain types of primary care facilities. However, this limitation was not a methodological flaw but rather the result of a deliberate focus strategy aimed at capturing the specific dynamics within a localized context. Second, the evaluation was conducted by a single consultant in oncologic surgery, introducing a high degree of subjectivity. The assessment tool itself was simple and lacked methodological precision, increasing the potential for bias. Nevertheless, these limitations offered valuable opportunities for future research. Broader geographic sampling, inclusion of additional variables, such as patient perspectives or policy makers, and involvement of multiple oncology specialists in referral systems could enrich future studies. Comparative research across regions or levels of care would also enhance our holistic understanding of cancer detection systems. Moving forward, interdisciplinary approaches that integrate epidemiology, medical anthropology, and health policy studies hold great promises for building more adaptive and equitable community-based early detection systems.

Conclusion

This study provides an in-depth understanding of the perspectives of GPs on the identification and interpretation of early-stage breast cancer symptoms in primary care settings. The findings reveal that while GPs had a basic awareness of early warning signs, there was a prevalent misconception that early symptoms are associated with pain, which contradicts the typical clinical presentation. Furthermore, several practitioners show limited ability to distinguish early-stage symptoms from those of more advanced stages, often blending the two in their responses. These insights indicate that without clear diagnostic guidelines and ongoing training, GPs may struggle to accurately recognize and interpret early breast cancer symptoms, potentially delaying the onset of diagnosis and referral. Strengthening knowledge through continuous education and practical, case-based learning is essential to improve early detection efforts in primary care.

Abbreviations

SADARI: *periksa payudara sendiri;* GP: general practitioner; PHC: primary health care; FGD: focus group discussion; SOP: standard operating procedure.

Ethics Approval and Consent to Participate

The ethical clearance number was 187/KEPK/V/2024, which was approved by Dharmais NCC Hospital Research Ethics Committee. Informants have given their consent to participate in this study.

Competing Interest

None.

Authors' Contribution

BA did all the data collection, analysis, and wrote the manuscript.

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