



Community pharmacists' role in prevention of breast cancer — is it possible?

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ABSTRACT

One of the most common cancers in women leading to death is breast cancer. The main reason for poor treatment results in Poland is inadequate response to the population-based early detection screening program for breast cancer. Women tend to ignore the initial symptoms, neglect breast self-examinations, and skip regular screening tests, which are crucial for preventing the disease, which is associated with insufficient education on the topic and the deficiency of visible promotional campaigns aimed at encouraging women to undergo regular preventive examinations. Local pharmacies, which are often visited by patients, are a good place to start working on breast cancer prevention. Pharmacists, as trusted health professionals, play a significant role in educating their patients about breast cancer and encouraging women to perform breast self-examinations and undergo mammograms regularly. The aim of this article is to review studies focusing on promotional campaigns for breast cancer awareness that are currently in place or ready to be implemented in pharmacies in many countries. Additionally, we will focus on how pharmacists can educate patients and encourage them to undergo screening tests to prevent breast cancer. This is such a crucial aspect because prevention of cancer is as important as treatment.

Key words: community pharmacy; breast cancer prevention; health promotion; screening tests

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Introduction

Breast cancer is the most common type of cancer among women, with its rates increasing by about 0.5% annually since the mid-2000s [1]. It causes the highest number of cancer deaths in women worldwide. Despite increased social awareness, greater access to screening tests, and improved efficacy of cancer treatment, epidemiological forecasts indicate that cancer is projected to become the leading cause of death worldwide over the next several decades. The primary predisposing factors for the onset of breast cancer encompass gender dimorphism, with incidence rates in

women surpassing those in men by a factor of 100. Additionally, advancing age, utilization of hormone replacement therapy (HRT), fluctuating estrogen levels, early menarche and late menopause, and genetic aberrations manifesting in BRCA1 and BRCA2 mutations are important risk factors [2–5]. A woman can prevent breast cancer by avoiding alcohol consumption, leading a healthy lifestyle, performing regular recreational physical activity, performing regular breast self-examinations. Furthermore, it has been shown that early maternity, i.e., before the age of 35, has demonstrated a protective effect against the onset of the disease, as has the sustained practice of

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breastfeeding [3, 4]. Self-examination and clinical breast examination are essential elements of breast cancer prevention, especially where access to more advanced screening tests is limited. According to the American Cancer Society (ACS), mammography is the most effective screening test that can protect women with average risk from developing the disease [6]. Both Polish and European oncological associations recommend mammography as the sole imaging examination for detecting breast cancer, as it increases the chances of survival through early detection of the disease in asymptomatic patients [7]. The discovery of mammography has led to a 14% increase in the cancer detection rate [8]. While it is the main method of preventing breast cancer in screening programs, its effectiveness varies depending on breast density. In case of dense breasts, ultrasound examination is an important complement to mammography. Because it is a test dependent on the medical equipment and the radiologist performing it, so far it has not been included in the recommendations of most societies regarding screening tests [9, 10]. What is important, similar to any diagnostic modality, both mammography and ultrasonography can yield false-positive and false-negative results. They may suggest the presence of cancer when it is not actually present or they may overlook the occurrence of the disease. Therefore, new mammography capabilities, such as tomosynthesis, are being explored for the possibility of introducing them into screening studies. The use of other available diagnostic methods, such as magnetic resonance imaging, as a screening modality, is limited due to their high costs and the time that is necessary to perform the test. An additional problem is the high number of false positive results and a close dependence on menstrual cycle and patient's hormonal status [11]. The use of magnetic resonance imaging (MRI) in screening is limited only to individuals at high risk of developing the disease — patients with BRCA genes mutation or with other hereditary breast cancer syndromes [12, 13].

In recent years, the development of science has been significantly influenced by the discovery and implementation of artificial intelligence (AI), which has also found its application in breast cancer prevention. It has been demonstrated that the use of AI as a second, alongside the radiologist, independent reader of mammography results,

positively influences the interpretation of these examinations and the diagnosis of breast cancer. This represents a promising prospect for future analysis of examination results, particularly due to the shortage of radiologists and discrepancies among them in interpreting screening examination results [14]. Currently, screening holds paramount importance in preventing breast cancer and enhancing survival rates. With the widespread implementation of screening and early-stage treatment, there has been a 41% decrease in mortality in the United States over the past 30 years. Observational studies have demonstrated that screening mammography decreases breast cancer mortality by approximately 20% in women who have undergone screening tests following an invitation [15]. While breast cancer is not very common among young women, it's still the most frequently diagnosed cancer in females under 40. Unfortunately, the chances of survival are lower compared to older women. The reason for this is that young women are often underrepresented in randomized trials aimed at establishing new therapies and strategies for breast cancer treatment decisions [16].

Insufficient knowledge about breast cancer among both young and older women can lead to the oversight of concerning symptoms manifesting within their bodies. This can result in serious consequences and debilitating treatment that could have been avoided if awareness of breast self-examination and prevention of breast cancer were greater [17]. Appropriate prevention of breast cancer, an individualized treatment regimen tailored to the patient's needs, the effectiveness of the method employed, and the achievement of the best possible treatment outcomes while minimizing side effects are the goals of every specialist. For this to occur, specialists, nurses, and pharmacists must collaborate to comprehensively address the needs of the oncological patient. Interdisciplinary collaboration among medical professionals contributes to the well-being of oncology patients and enhances the quality of their treatment [18]. Most physicians recognize the value of expanded pharmaceutical care, where the pharmacist acts as a qualified expert in pharmacotherapy [19].

Aiken and colleagues demonstrated in their study that effective communication and collaboration among physicians, nurses, pharmacists, and physiotherapists positively impact the quality

of their work, the quality of patients' lives during oncological treatment, and ensure a higher level of patient safety throughout the treatment process [18]. Therefore, it is essential for the interdisciplinary team to operate efficiently and comprehensively, providing holistic care to patients. A team consisting of multiple specialists from various fields allows for the coordination of different aspects of care, enabling the delivery of personalized care to patients. Also important is the individual approach to each patient, who is unique both medically and personally. The interdisciplinary team can tailor care to the individual needs and preferences of the patient, leading to a more personalized approach to treatment. By considering diverse perspectives and recommendations regarding best practices in cancer prevention and treatment, optimization of therapy, risk reduction, and improved treatment outcomes can be achieved. Interdisciplinary approach also impacts the provision of emotional, educational, and practical support, aiding patients and their families in coping with the disease and treatment. In these various tasks, the significant role of the pharmacist in the team has been emphasized for several years, operating in various areas also at a very early stage in the field of breast cancer prevention.

Materials and methods

A comprehensive review was conducted, focusing on familiarizing with reviews, scientific studies, meta-analyses, and aggregate analyses regarding pharmacists' role in interdisciplinary cooperation in prevention of breast cancer. PubMed (MEDLINE) and Google Scholar were primarily utilized for searching scientific articles. The analysis of scientific publications was mainly carried out in English, with a minor portion in Polish. Efficient content searching involved using keywords such as "breast cancer", "breast cancer prevention", "health promotion", "screening tests", "community pharmacy" and "physician", "pharmacist", "cooperation", "collaboration". This scientific review aimed to find key information regarding the role of pharmacists working in community pharmacies in breast cancer prevention, as well as effective health promotion methods that can be implemented in daily practice, resulting in benefits for the health care of patients.

Results

Over the years, there has been a noticeable increase in the importance of the pharmacist profession in the European and global markets. This is associated with the continuously growing pharmaceutical market, the introduction of new opportunities and rights for pharmacists, including the ability to prescribe certain types of medications, but above all, with the strengthening of the pharmacist-patient relationship where pharmacists are often considered as the so-called "first-contact pharmacists". This is related to long queues for specialists, but also due to the trust that patients place in their community pharmacists [20].

The introduction of pharmaceutical care in many countries is a significant step in building patients' trust in pharmacists. This service enables a more efficient access to advice from a qualified medical professional such as a pharmacist, especially when a visit to a doctor is postponed (21). Furthermore, a factor that encourages patients to consult pharmacists is that these consultations are free, there is no requirement for prior appointment scheduling, the opening hours of local pharmacies are extended, and they are conveniently located near homes compared to medical clinics, which are not as easily accessible [22, 23].

Pharmacists working in community pharmacies, in addition to performing their basic duties related to dispensing medications, play a significant role in medication counseling and raising awareness about potential adverse effects or interactions. Research suggests that pharmacists provide more and more medication counseling year by year. Mainly in response to patient requests, they provide information about new medications previously unknown to the patient, and even as part of pharmaceutical counseling, they print leaflets so that the patient has access to them [24]. Moreover, pharmacists, who consider themselves the most prepared to advise patients on both medication adherence and adhering to healthy behaviors, are at the forefront of health promotion [25]. In a study conducted in Estonia, societal expectations revealed that 63% of respondents wished for pharmacists to become even more actively involved in health promotion. This has led to the development of specific health promotion programs targeting various diseases from which pharmacists

Table 1. Examples of pharmacists' role in breast cancer prevention

Publication	Pharmacist's role	Country
Christensen, Farris (2006) [24] Calis et al. (2004) [33]	Providing breast self-examination (BSE) instructions and encouraging patients to perform BSE. Subsequently, conducting a telephone follow-up to determine the regularity of self-examination by the patients	United States
Mensah et al. (2020) [22]	Promoting prevention using clear leaflets and posters in the community pharmacies	Ghana
Volmer et al. (2008) [26]	Development of new specific health promotion programs for pharmacists targeting various diseases	Estonia
Buhl et al. (2023) [27]	The willingness to develop cancer prevention programs, deepen knowledge about the rehabilitation of oncology patients, and implement more training sessions in this area are important aspects for community pharmacy staff	Denmark
Sendall MC et al. (2018)	Under the High-Quality Pharmaceutical Care Program, pharmacies are required to promote breast cancer prevention by selling screening kits to individuals who do not qualify for free screenings	Australia
Park K et al. (2011) [29]	Promoting mammography and debunking breast cancer myths through posters displayed on pharmacy walls, distributing leaflets, and direct mail campaigns promoting screening	South Korea
Oqal et al. (2023) [34]	Increasing the number of educational training sessions on breast cancer for pharmacists so that they can provide professional advice on cancer prevention to patients	Jordan

can benefit [26]. A study in Denmark involving community pharmacy staff shows that they are also willing to provide information on cancer prevention and treatment to oncology patients. They also emphasize the necessity and willingness to deepen their knowledge in this area through training in order to best educate their patients about cancer [27].

Expanding knowledge in this area is crucial because in the future, community pharmacies will have an increasingly significant role in promoting cancer prevention, primarily breast and bowel cancer. The examples of pharmacists' role in breast cancer prevention are presented in Table 1. Under the Quality Care Pharmacy Program, which operates effectively in Australia, local pharmacies are required to work towards cancer prevention and promote health-promoting activities. This is because community pharmacies in Australia are visited by over 300 million patients annually, making them an excellent venue for promoting cancer screening. One of the proposals for promoting preventive programs for bowel and breast cancer is to sell screening kits to individuals who do not qualify for free screenings at healthcare facilities [28].

Local pharmacists, while promoting prevention, can utilize various tools, such as leaflets or posters, which, when presented clearly, would effectively reach patients [22]. Furthermore, they could initiate workshops and training sessions and participate in events organized by nursing homes or

charitable organizations. Health could (also) be effectively promoted by distributing and selling of books, magazines, publications, and e-publications on medical advice and health promotion topics, readily available in community pharmacies to provide mutual benefits for both patients and pharmacists. Interventional studies were conducted among residents of the Korean city of Gunpo aimed to debunk myths surrounding breast cancer and encourage mammographic screenings. Interventions in Gunpo aimed at promoting breast cancer prevention, raising awareness about the disease, and debunking myths focused on activities such as displaying posters in clinic waiting rooms and pharmacy walls, distributing leaflets during street events, direct mail campaigns promoting breast cancer screening, and conducting educational sessions in small groups [29]. Consultations with doctors and pharmacists also played a significant role, contributing to the improvement of campaign outcomes. This resulted in a decrease in the propagation of breast cancer myths, and women of various ages were more willing to participate in mammographic screenings. This serves as evidence that campaigns reaching clinics and pharmacies have a positive impact on society [29, 30].

An educational program based on community pharmacist interventions aimed at women, utilizing breast models and a computer program as a risk assessment tool seems to be a promising initiative

for promoting breast cancer prevention. The campaign focusing on these actions brought significant improvement in the regularity and frequency of breast self-examination. Additionally, it engaged a large number of patients who began to adhere to the guidelines of the American Cancer Society [30]. A crucial aspect of cancer prevention is that access to community pharmacies is not only easy but also equitable, regardless of socioeconomic status. One study, focusing on women with low incomes, demonstrated that pharmacies could be the site for identifying women at high risk and, based on this, pharmacists could incorporate preventive and educational actions for breast cancer for these women and refer them for further diagnostics [31].

In the “Every Woman Matters” program in Nebraska, which provides free or low-cost mammography and cytology screenings for women in medically underserved situations, pharmacists play a crucial role. They distribute enrollment forms, assess eligibility, and provide necessary information. Both independent and chain pharmacies participate in this initiative with each receiving material to distribute to patients. Through their involvement, women can obtain vouchers for screenings, and physicians evaluate their appropriateness and order mammograms. Thanks to the collaboration of pharmacists with other medical partners, this program can be effectively implemented [32].

Comprehensive counseling sessions often raise patient awareness of the importance of taking preventive measures to avoid various types of cancer. In a study conducted in the United States, pharmacists assessed the risk of breast cancer in 188 women. These individuals were surveyed about their adherence to recommended breast cancer screening techniques outlined by the American Cancer Society. Following discussions on the appropriate screening methods and provision of instructions, 140 of these women demonstrated an increased willingness to regularly perform breast self-examinations after consulting with the pharmacist for 6 months. This underscores the effectiveness of pharmacists in educating and encouraging patients to engage in breast cancer prevention [33].

Despite many efforts to educate patients about the risk of developing cancer and provide advice on breast cancer prevention, many pharmacists still lack the confidence to implement these actions in

their daily practice. A study in Jordan from 2023 confirms concerns of pharmacists regarding health promotion, where the main concern is inadequate access to educational materials on breast cancer prevention, as well as shortage of appropriate space in community pharmacies for potential consultations with patients [34]. Insufficient provision of adequate training materials and regular training sessions for pharmacists leads to pharmacists not feeling competent to educate their patients about cancer, let alone encourage women to participate in preventive breast cancer screening programs or perform self-assessment tests [35]. Another issue, in addition to the lack of training, insufficient space for providing advice on breast cancer prevention, is the inadequate amount of qualified personnel. For example, in Kuwait, where pharmacies are small, a greater number of staff than one pharmacist is not required. If funds were allocated to employ more people or if the task of dispensing medications was divided among technicians, pharmacists could focus more on their role as pharmaceutical advisors [25].

Nevertheless, the majority of pharmacists working in community pharmacies are convinced that their work and experience have a positive impact on health promotion. This is primarily due to the trust their patients place in them and the accessibility of local pharmacies [21, 36]. The Poznan University of Medical Sciences in cooperation with Breast Cancer Unit in Greater Poland Cancer Centre has embarked on pioneering efforts in Poland to highlight the contributions of pharmacists working in community pharmacies. Pharmacists in Poznan will actively participate in breast cancer prevention campaigns, with tailored educational materials currently in development for this purpose. These initiatives hold substantial promise, with a considerable demand for their implementation. They are garnering significant societal interest and have the potential to bolster the pivotal role of pharmacists as essential partners in the realm of public health. The community pharmacist is the appropriate person to provide advice on breast cancer prevention and implement actions and promotional campaigns to encourage screening for cancer. Providing training for pharmacists in this area will allow them to improve their knowledge of current screening guidelines and awareness of available educational resources. This, in turn, can have a positive impact on the uptake of preven-

tive breast cancer screenings and earlier detection of concerning changes, thus increasing the chances of living a healthy life [37].

Discussion and Conclusions

The presented publication focuses on the significant role of pharmacists in promoting public health, with particular emphasis on breast cancer prevention. The importance of mutual cooperation between pharmacists and physicians has been highlighted to ensure effective breast cancer prevention. It is confirmed that the introduction of pharmaceutical care brings benefits such as improved adherence to therapeutic recommendations and increased patient trust in pharmacists. As a result, local pharmacists can contribute to promoting breast cancer prevention through various programs, promotional activities, and pharmaceutical counseling advocating for breast cancer screening.

In summary, local pharmacies have the potential to play a crucial role in promoting public health, especially in the field of breast cancer prevention. Collaboration between different healthcare professions and ongoing investments in the development of pharmacist competencies are essential for improving patients' health and quality of life. Implementation of educational initiatives and increased access to pharmaceutical counseling can significantly contribute to raising public awareness of the importance of breast cancer prevention and other cancer-related issues.

Ethical approval

Ethical approval was not necessary for the preparation of this article.

Author's contribution

All authors contributed to the conception or design of the work, the acquisition, analysis, or interpretation of the data. All authors were involved in drafting and commenting on the paper and have approved the final version.

Conflict of interest

Authors declare no conflict of interests.

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