

Factors affecting participation in the breast cancer screening program in Poland

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Abstract of the doctoral dissertation in English

Introduction and rationale of the study

Breast cancer remains a significant public health concern globally, including in Poland, due to its high incidence and impact. In 2022, breast cancer accounted for 23.6% of all cancer diagnoses among Polish women, with the highest incidence observed in the 60–69 age group. It is also the second leading cause of cancer-related deaths after lung cancer, responsible for 14.9% of such fatalities, predominantly affecting women over 85 years old. Early detection through screening programs is crucial for effective treatment and mortality reduction. Despite the availability of the breast cancer screening program in Poland, participation rates remain low (32.41% as of May 1, 2025), highlighting the need for enhanced educational and organizational efforts to improve uptake and align national outcomes with international oncology care standards.

Understanding the barriers to screening participation is essential for optimizing these programs. Integrating health psychology principles offers a promising approach to address these challenges. Health psychology, an interdisciplinary field, examines how psychological, behavioral, and social factors influence health, disease progression, and treatment outcomes. Grounded in the biopsychosocial model, it explores mechanisms such as stress, health beliefs, habits, and social support that shape health behaviors and preventive actions. This knowledge informs strategies to promote health, prevent illness, and support patients and healthcare systems. The field's dynamic integration of psychology, medicine, and social sciences enables tailored interventions that consider individual differences in behavior and stress management. Health psychology plays a vital role in encouraging participation in breast cancer screening, where decisions are influenced by complex social, emotional, and practical factors. Barriers like fear and logistical difficulties reduce attendance, while social support enhances adherence.

In the discourse on health, Machteld Huber introduced the concept of positive health, defining it as a dynamic capacity for adaptation, self-management, and the development of subjectively perceived health indicators. This approach emphasizes the individual's resources and potential,

encompassing physical functioning, mental health, sense of purpose, quality of life, social functioning, and the ability to cope with challenges. The concept aligns with the principles of personalized medicine, moving beyond the traditional biomedical model.

Health behaviors, shaped by sociodemographic, social, cultural factors, and personality traits, play a fundamental role in determining an individual's well-being. The early formation of health-promoting habits has long-lasting implications for health outcomes in adulthood.

The locus of health control, divided into internal (the belief in the influence of one's own actions) and external (the belief in the influence of external factors), holds significant importance in shaping health-related attitudes. An internal locus of control is associated with health-promoting behaviors, whereas an external locus may lead to the displacement of responsibility. From a therapeutic perspective, a mixed locus of control, acknowledging both external influences and personal efficacy, appears to be the most advantageous.

This study is grounded in several key premises: the substantial social dimension of breast cancer as a health issue, persistently low participation rates in screening programs, the lack of comprehensive psychosocial analyses within the population of Polish women, recommendations from the National Oncology Strategy (NOS), the need for practical implications to enhance the effectiveness of preventive programs, and adherence to rigorous methodological and ethical standards. These considerations justify undertaking research aimed at an in-depth examination of psychosocial factors influencing women's participation in mammographic screening, thereby contributing meaningfully to the advancement of medical knowledge and breast cancer prevention practices.

Aim of the study

The primary objective of this study was to analyze factors influencing Polish women's participation in preventive mammography screening. The research focused on identifying psychosocial determinants motivating health-promoting behaviors and recognizing groups at a higher risk of delaying medical consultation after noticing concerning symptoms. Achieving these aims could facilitate the personalization of health education programs by incorporating psychological components, thereby enhancing public health interventions and increasing screening participation rates.

The study was further expanded to include: an analysis of European breast cancer mortality data from 2011 to 2017 and an assessment of healthcare resource availability's impact

on mortality; an overview of the epidemiological situation of breast cancer in Poland, risk factors, and prevention possibilities; exploration of the relationship between health locus of control and self-reported preventive behaviors; and identification of factors affecting willingness to participate in screening among Polish women aged 45–69.

This project aligns with the goals of Poland's Cancer Control Strategy 2015–2024 and the National Oncology Strategy 2020–2030, both of which aim to implement comprehensive reforms in the national oncology care system.

Material and Methods

The study employed three standardized questionnaires: the Health Behavior Inventory (HBI), the Multidimensional Health Locus of Control Scale version B (MHLC-B), and the Coping Orientation to Problems Experienced questionnaire (Mini-COPE). These tools enabled a multifaceted assessment of cognitive, emotional, and behavioral factors influencing Polish women's decisions regarding mammography screening. Utilizing standardized instruments supports evidence-based practice, facilitates monitoring of intervention needs and outcomes, and allows for comparative analysis. Additionally, the author-designed questionnaire tailored to the study's specific objectives provided unique data, enriching the analytical value.

Results

It was observed that the higher the financial expenditure on health care and the better the health care accessibility, the lower the mortality rates of breast cancer.

Correlation analysis showed that the internal health locus of control was positively correlated with healthy nutrition habits, preventive behaviors, and positive adjustment. Additionally, the external health locus of control was also positively correlated with preventive behaviors, positive adjustments, and health-promoting practices. In contrast, a higher belief in the influence of chance was inversely correlated with healthy nutrition habits and positive adjustment.

Women were more likely to participate in screening if they were older, married, had children (although having an additional child was associated with a lower likelihood of screening), used oral contraception, had received education on breast cancer prevention, had higher average intensity in the Health Behavior Inventory and scored significantly higher on the author's scale, and demonstrated an external health locus of control. Additionally, women who reported

attending prophylactic examinations were significantly more likely to express a need for emotional support.

Conclusions

The presence of screening programs does not automatically translate into high and consistent participation among women. Effective initiatives require credible and persuasive communication to increase awareness and encourage regular screening. Breast cancer remains a significant social and economic challenge, necessitating the identification of factors influencing health awareness and motivation for a healthy lifestyle, including screening participation. Modifying communication strategies and incorporating health psychology education can enhance screening attendance, ultimately reducing mortality.

A crucial aspect in preventive planning is addressing the psychological health locus of control, which shapes women's attitudes and health behaviors. Tools like the MHLC-B questionnaire help identify barriers and motivators for engaging in health-promoting actions, supporting program effectiveness. Raising social awareness and health education is vital for improving women's quality of life, enabling early detection of treatable disease stages, and lowering breast cancer mortality. Practically, well-informed women with easy access to screening feel safer and are more likely to participate regularly in preventive examinations.

Discussion

This study introduces an innovative approach to breast cancer prevention by combining psychological determinants of health behaviors with practical aspects of organizing screening programs and health education. The use of the MHLC-B questionnaire enabled precise identification of motivations and barriers related to the health locus of control, a tool rarely used in Polish research, which underscores the scientific value of the project. The application of the CAWI method allowed for the collection of significant cognitive as well as emotional-behavioral data amid the COVID-19 pandemic. The study's findings can be used to develop personalized educational strategies that consider the diverse psychological profiles of women, thereby enhancing their motivation and participation in screening programs. Additionally, the work highlights the importance of integrating modern diagnostic technologies with psychological and sociological factors, offering comprehensive solutions for effective breast cancer prevention and providing guidelines for future research and clinical practice.

Findings confirm that implementing screening programs alone does not ensure high participation rates, consistent with the objectives of the Cancer Control Strategy 2015–2024. Strengthening communication and health education is essential to raise awareness and motivate regular mammography attendance. The strategy also emphasizes increasing knowledge about risk factors and promoting healthy lifestyles.

The study highlights the need to identify psychosocial motivators for screening participation, supporting comprehensive primary and secondary prevention efforts. Incorporating health locus of control as a psychological factor aids in designing effective preventive interventions and personalizing health education.

Improving access to quality screening services and ensuring patient comfort and safety fosters greater engagement, as emphasized in both the Cancer Control Strategy and the National Oncology Strategy 2020–2030. The latter stresses integrating educational, promotional, and systemic actions to boost screening uptake, crucial for reducing breast cancer incidence and mortality.

Analysis of NOS reports from 2020–2023 underscores the ongoing need to enhance health education, including psychological aspects, and to remove organizational and psychosocial barriers. The study's conclusions align with these strategies, underscoring the importance of education, communication, access, and psychosocial support in improving breast cancer prevention effectiveness in Poland.

An important aspect of planning preventive actions is considering the health locus of control, which influences women's attitudes and health behaviors. Tools such as the MHLC-B questionnaire enables the identification of barriers and motivations for engaging in health-promoting activities, thereby supporting the effectiveness of prevention programs. Increasing public awareness and health education are crucial for improving women's quality of life, enabling early detection of disease at a treatable stage, and reducing breast cancer mortality. Practical findings indicate that women who are well-informed and have easy access to screening feel more secure and are more willing to participate regularly in preventive screenings.