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Out-of-pocket (OOP) costs incurred by breast cancer patients in Poland

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ABSTRACT

Introduction. Breast cancer is the most frequently diagnosed malignant tumor in women worldwide, the treatment of which, despite being financed by public systems, generates significant costs borne directly by patients. Aim: The study aimed to analyze out-of-pocket (OOP) costs incurred by breast cancer patients in Poland, identify the main categories of expenses, and assess their impact on patients' financial situation.

Material and methods. A survey was conducted on a group of 106 women with breast cancer, using a questionnaire containing questions about the demographic situation and treatment costs. Statistical analysis was performed using IBM SPSS Statistics 26.

Results. As many as 90.6% of respondents declared incurring additional treatment costs, mainly related to travel, dietary supplements, private consultations, and diagnostics. The average annual expenditure on private consultations amounted to PLN 1,137.36 (EUR 264.50), and the monthly costs of prescription drugs were PLN 193.25 (EUR 44.94). More than half of the patients also incurred costs related to rehabilitation, a specialist diet, and medical equipment.

Conclusions. Breast cancer treatment in Poland is associated with a significant financial burden for patients. This indicates the need to develop systemic support mechanisms and expand the scope of reimbursement, which can improve the quality of life of patients and access to comprehensive oncological care.

Keywords: OOP, out-of-pocket, cost, breast cancer

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Introduction

Breast cancer is the most commonly diagnosed malignant tumor in women worldwide, posing a significant challenge to both healthcare systems and patients and their families [1]. It is estimated that in 2020, over 2.3 million new cases of breast cancer and 685 thousand deaths were recorded worldwide [2]. The development of new diagnostic methods and oncological therapies has improved survival rates, but long-term treatment generates significant costs [3]. In many countries, including Poland, the healthcare system finances specific

diagnostic and therapeutic procedures, but many aspects of oncological care require additional financial outlays, often from patients [4].

Out-of-pocket costs (OOP), i.e., expenses incurred directly by patients outside the official reimbursement system, constitute a significant economic burden. They include direct expenses, such as non-reimbursed drugs, visits to specialists, diagnostic tests, rehabilitation or palliative care, indirect costs related to loss of income, the need to limit professional activity, and expenses for transport or accommodation near treatment centers [5]. Studies emphasize that high OOP costs can lead to

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serious socio-economic consequences, including household debt and abandonment of part of the therapy, which can affect the prognosis and quality of life of patients [6].

Previous research has shown that the total economic burden of breast cancer is driven primarily by costs associated with systemic therapy, hospitalizations, and long-term follow-up care [7]. For example, a U.S. study estimated that the mean annual cost of breast cancer treatment per patient exceeds USD 20 thousand, with systemic therapies such as targeted and hormonal agents accounting for more than half of direct medical expenditures [8]. In European settings, chemotherapy, imaging, and hospital stays are the main cost drivers, although indirect costs — such as productivity loss — may represent up to 30–40% of the total burden [9].

Evidence on OOP expenses highlights substantial variation across health systems. Studies conducted in high-income countries indicate that breast cancer patients may spend between USD 1 thousand and USD 10 thousand out-of-pocket annually, depending on insurance coverage and treatment phase [10–12]. In the U.S., a recent survey reported that 42% of breast cancer survivors experienced financial hardship, with average monthly OOP payments exceeding USD 300, mainly for medications, supportive care, and travel [11].

In Europe, data from France and the UK show that non-reimbursed expenditures are most often related to complementary medicines, wigs, dietary supplements, transportation, and professional home care [13, 14]. In lower- and middle-income countries, OOP payments can represent up to 45–70% of total treatment costs, frequently resulting in catastrophic health expenditures for affected households [15].

Understanding the structure and determinants of OOP costs is therefore essential for developing effective financial protection policies and for reducing the risk of financial toxicity among breast cancer patients.

Objective

This paper aims to conduct a detailed analysis of out-of-pocket costs incurred by breast cancer patients in Poland, identify key categories of expenses, and indicate potential financial support mechanisms.

Material and methods

An anonymous survey entitled “Costs of breast cancer in Poland” consisting of 30 questions (9 concerning demographic data and 22 concerning the central part of the survey) was made available in electronic form between 01 July 2024 and 30 November 2024. Popular social media (Facebook) was used and made available to

representatives of organizations associated with breast cancer patients, who distributed the survey among their charges. Out of pocket spending were surveyed in anonymous dependent questions in the central part of the survey. Treatment costs were divided into annual and monthly costs. For the purpose of international comparison, all costs in Polish Zloty (PLN) were converted to Euro (EUR) at an exchange rate of 1 EUR = 4.30 PLN.

Statistical analysis

The analysis was performed using IBM SPSS Statistics 26. The values of the chi-square test statistics for data independence were calculated for the remaining data. In order to specify the occurring relationships, the z-test was used to compare structure indicators (percentage value).

Patient participation

The anonymous survey did not bear the characteristics of an experiment, which was confirmed by the Bioethics Committee at the Poznan University of Medical Sciences. In the introduction to the survey, respondents were informed about the voluntary and anonymous nature of the survey, which had no impact on the treatment they received, and the data collected during the study were to be used only for scientific purposes.

Results

Characteristics of the study group

In the survey, 100% (n = 106) of the responses of breast cancer patients participating in the study were analyzed. Two-thirds of the respondents were diagnosed with early breast cancer — 66% (n = 70). The median age of the study participants was 45 years; the average age was 53.5 years. Most respondents came from cities with more than 250 thousand inhabitants — 34.9% (n = 37). More than 3/4 of the respondents (75%, n = 80) declared they were professionally employed, and 73.8% (n = 78) had higher education. In almost half of the patients (44.3%, n = 47), oncological treatment lasted 2–3 years. The treatment process to date is presented in Figure 1.

The central part of the survey concerned collecting data on out-of-pocket payments among breast cancer patients. In the vast majority of patients, 89.6% (n = 95), the Polish National Health Fund (NFZ, *Narodowy Fundusz Zdrowia*) covered the costs of oncological treatment (i.e., chemotherapy, hormone therapy, surgery,

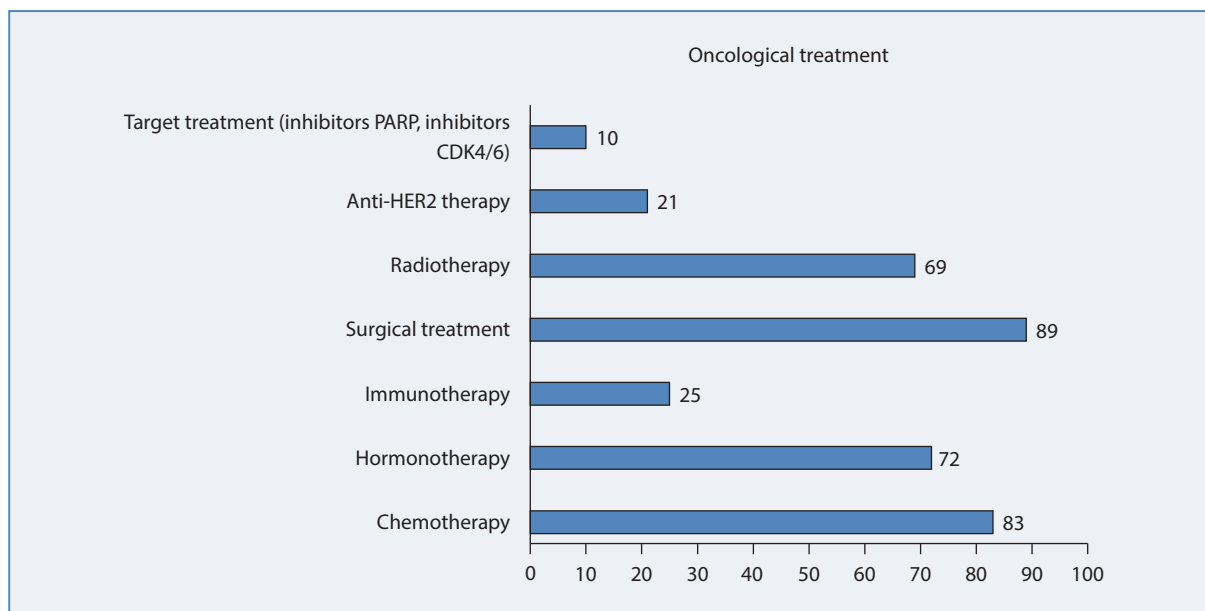


Figure 1. Oncological treatment methods; CDK4/6 — cyclin-dependent kinase inhibitor 4 and 6; PARP — pharmacological inhibitors of the enzyme poly(ADP ribose) polymerase

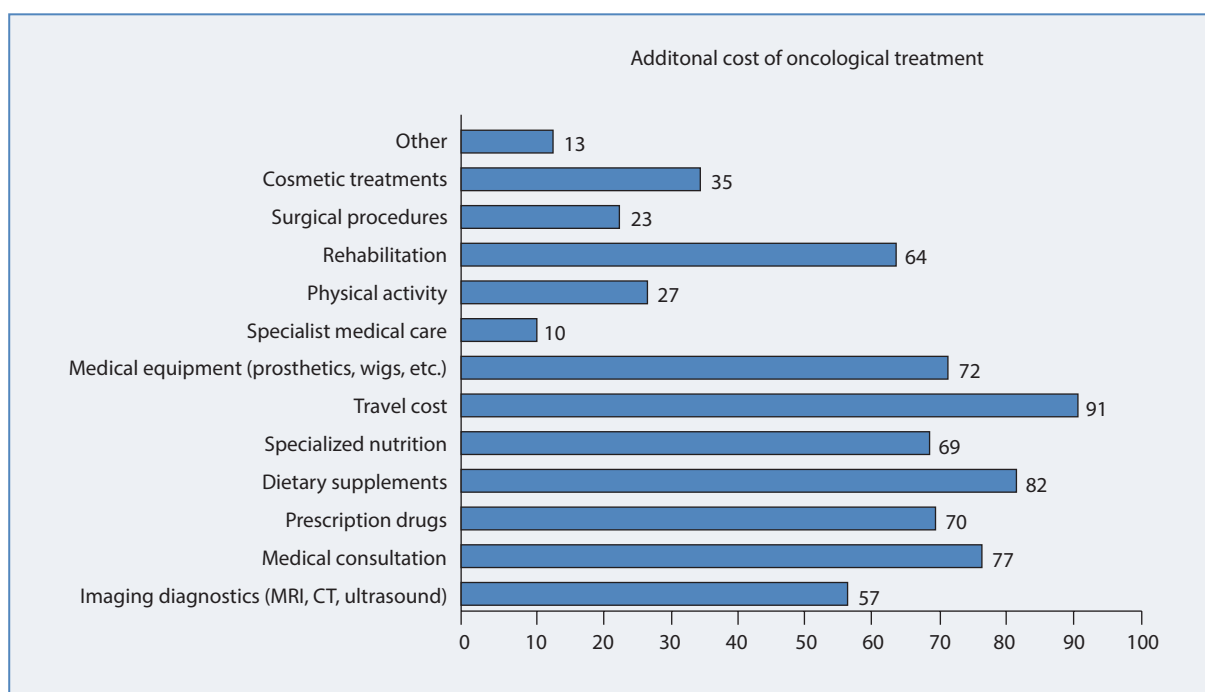


Figure 2. Additional costs of treatment and therapy support; CT — computed tomography; MRI — magnetic resonance imaging

and radiotherapy), while 69.8% ($n = 74$) of patients were not qualified for the NFZ drug programs, which are not financed under other guaranteed benefits. Additional treatment costs outside the NFZ were borne by 90.6% ($n = 96$) of patients. Additional costs borne by the respondents are presented in Figure 2.

The most common additional costs for patients were the costs of travel to oncology centers ($n = 91$,

85.8%) and dietary supplements ($n = 82$, 77.4%). One of the additional costs of treatment for patients was imaging diagnostics (53.8%, $n = 57$). The most common imaging test patients had outside the NFZ system was ultrasound (70.8%, $n = 75$). Among people who decided to have additional private imaging diagnostics (77.3%, $n = 82$), the median annual cost was $M = \text{PLN } 540.3$ (EUR 125.65).

Table 1. Summary of costs incurred by patients during oncological treatment

Expense category	Average monthly cost [PLN]	Average monthly cost [EUR]	Average annual cost [PLN]	Average annual cost [EUR]
Medical consultations (private visits)	—	—	1137.36	264.5
Prescription drugs	193.25	44.94	2319	539.3
Over-the-counter medications	143.17	33.3	1718	399.53
Dietary supplements	146.83	34.15	1762	409.77
Specialized nutrition	372.5	86.63	4470	1039.53
Medical equipment	92.86	21.6	1114	259.07
Rehabilitation	296.91	69.05	3563	828.6
Specialist medical care	49	11.4	588	136.74
Cosmetic/surgical procedures	208.62	48.52	2503	582.09
Private medical packages	100–200	23.26–46.51	1200–2400	279.07–558.14

EUR — euro; PLN — Polish Zloty

In addition to standard treatment within the NFZ, as many as 84.9% (n = 90) used additional medical consultations (private visits) with various specialists.

During the year, patients spent M = PLN 1,137.36 (EUR 264.50) on additional medical consultations; most often, for a single medical consultation, the respondents paid PLN 300 (EUR 69.77) (29.2%, n = 31). The costs of prescription drugs, which were an additional burden for 2/3 of the respondents (for n = 70, 66%), amounted to M = PLN 193.25 (EUR 44.94) per month, while over-the-counter drugs M = PLN 143.17 (EUR 33.30) and dietary supplements M = PLN 146.83 (EUR 34.15) (Tab. 1).

The following costs incurred by patients during treatment were specialist nutrition. People who used a specialist diet spent M = PLN 372.50 (EUR 86.63) per month. Medical equipment needed during treatment costs M = PLN 92.86 (EUR 21.60) per month. The next significant patient cost was rehabilitation; the monthly cost was M = PLN 296.91 (EUR 69.05).

The cost included in the above analysis was also specialist medical care (e.g., home visits by a nursing team); this cost was M = PLN 49.00 (EUR 11.40) per month, while cosmetic and/or surgical procedures cost M = PLN 208.62 (EUR 48.52).

Over 77.4% (n = 82) of respondents did not use private medical packages, i.e., Luxmed, Medicovert, Scanmed, etc.), and people who purchased a subscription spent between PLN 100–200 (EUR 23.26–46.51) on it (n = 44, 41.5%).

The costs associated with cancer disease consume the monthly own income of patients, most often 11–20% (n = 28) of own income (Fig. 3). The average income of respondents is PLN 6,211.32 (EUR 1,444.49).

Discussion

In Poland, as in other countries with a health care system based on public financing, the problem of out-of-pocket costs in breast cancer treatment is increasingly the subject of numerous analyses. The subject of the analysis was the assessment of additional expenses incurred by breast cancer patients, and not their intention or the financial capabilities of the patient and her family and supporters. In recent years, online fundraising for the treatment of oncological patients has become popular in Poland, which, on the one hand, increases the financial capabilities of patients but, on the other hand, may give a false assessment of the functioning of the health care system (e.g., giving up procedures under the NFZ in favor of faster tests and interventions under private health care).

Particular attention should be paid to the costs of procedures and interventions that should be carried out in the diagnostic and therapeutic process by the recommendations of scientific societies, and consider those expenses incurred by patients that are unjustified and do not improve the prognosis or quality of life of patients or may even be harmful (alternative methods).

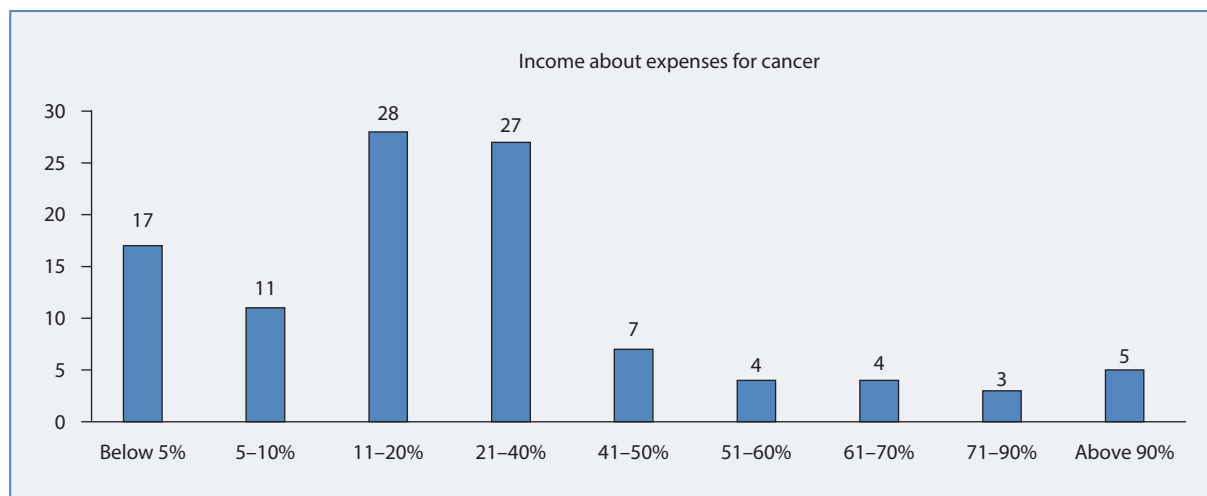


Figure 3. Own income about expenses for cancer

Our study showed that as many as 90.6% of patients incurred additional costs related to treatment, with the most significant expenses related to medical consultations, purchase of drugs, rehabilitation, and a specialist diet. The average annual cost of private consultations was PLN 1,137.36 (EUR 264.50), while monthly expenses for prescription drugs averaged PLN 193.25 (EUR 44.94), and for over-the-counter preparations and dietary supplements — PLN 143.17 (EUR 33.30) and PLN 146.83 (EUR 34.15), respectively. In addition, patients often invest in medical equipment, rehabilitation, or specialist nursing care, which increases treatment costs [16].

Comparing the situation of Polish patients to international data, it can be seen that the financial burden during oncological treatment also occurs in countries with more developed healthcare systems. Studies conducted in the United States show that the average annual expenses of patients on non-reimbursed elements of therapy reached even USD 5,000, which for many of them meant the need to get into debt or give up specific procedures [17]. Similar results were obtained in studies conducted in European countries such as Germany and Great Britain, where breast cancer patients declared significant financial difficulties related to treatment despite the existence of well-developed health insurance systems. The study involved 2108 patients; 8.6% declared significant financial problems, while 69.6% did not have any.

Financial problems were the most important factor influencing patients' quality of life, impairing functioning in relationships, experiencing joy from social pleasures, and influencing patients' physical and mental health [18]. In the face of rising treatment costs and limited reimbursement of medical procedures, an important

issue is the search for solutions to reduce the economic burden on patients. The proposed strategies include, among others, extending the scope of reimbursement of specific therapies and drugs, introducing tax relief for cancer patients, developing financial support programs, and popularizing health insurance covering expenses related to cancer treatment [19].

Furthermore, the concept of financial toxicity should be highlighted as a critical side effect of modern oncology. Our data shows that costs associated with cancer consume a significant portion of patients' monthly income (often 11–20%), which may correlate with increased psychological distress and lower treatment adherence. The fact that patients pay for diagnostics and private consultations out-of-pocket, despite the existence of the oncological fast-track (DiLO) in Poland, points to a persistent gap between the theoretical availability of services and the practical needs of patients for rapid intervention.

In this context, analyzing the out-of-pocket cost structure in breast cancer treatment and identifying the most expensive areas of expenditure may contribute significantly to the discussion on shaping health policy and patient support systems [20].

Conclusions

The study indicates that despite the financing of basic oncological procedures by the National Health Fund, the vast majority of patients with breast cancer in Poland incur additional treatment costs. These expenses include drugs and specialist consultations and rehabilitation, dietary supplements, and imaging diagnostics, often performed outside the reimbursement system.

These financial burdens constitute a significant element of the so-called financial toxicity of cancer, which may affect the quality of life, course of treatment, and even therapeutic decisions of patients.

The study's results emphasize the need for systemic actions — including the extension of the scope of reimbursement, promotion of additional health insurance, and patient education, which could reduce the economic effects of the disease and support patients in the treatment process.

Limitations of study

This study has several limitations that should be considered when interpreting the results. The survey was conducted online and disseminated primarily through social media and patient organizations, which may have introduced selection bias. Participants who are active in online support groups or social media may differ from the general population of breast cancer patients in Poland in terms of education level, socioeconomic status, or engagement in treatment decisions. Consequently, the results may not be fully representative of all breast cancer patients in the country.

Article Information and Declarations

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethics statement

The anonymous survey did not bear the characteristics of an experiment, which was confirmed by the Bioethics Committee at the Poznan University of Medical Sciences. In the introduction to the survey, respondents were informed about the voluntary and anonymous nature of the survey, which had no impact on the treatment they received, and the data collected during the study were to be used only for scientific purposes.

Author contributions

All authors participated in the conception, design, and execution of the study, as well as the drafting of the manuscript.

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Conflict of interest

Authors declared no conflict of interest.

Supplementary material

None.

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