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The association between patients' sociodemographic characteristics and out-of-pocket payments during chemotherapy for colorectal cancer

Abstract

Relevance. Colorectal cancer (CRC) is one of the three most prevalent malignancies in terms of incidence and mortality, both in Ukraine and worldwide. Despite Ukraine's healthcare financing reform, out-of-pocket payments by patients remain a significant concern.

Aim. To compare the sociodemographic characteristics of patients receiving chemotherapy for CRC. This comparison was made according to whether they made OOPPs.

Materials and methods. A total of 459 people took part in this cross-sectional study. Their sociodemographic characteristics, subjective assessments of healthcare accessibility, awareness and satisfaction were analysed. Respondents who made OOPPs were compared with those who did not using the χ^2 test and the Cochran-Armitage trend test in R with the EZR graphical user interface.

Results. A statistically significant linear trend towards an increased frequency of OOPPs was observed. This was with increasing age ($p = 0.026$) and increasing settlement size ($p = 0.029$). However, the groups did not differ significantly in terms of sex, educational attainment, or income ($p > 0.05$). The likelihood of family members acknowledging payments was significantly higher than that of patients themselves ($p = 0.001$). Patients who made OOPPs were significantly more likely to postpone diagnosis or treatment than those who did not (21.8% versus 8.4%, $p < 0.001$). Patients who were better informed about services that were free of charge were less likely to make payments ($p < 0.001$), as shown by a strong linear trend. Patients who did not make OOPPs also reported a significantly higher level of satisfaction with the quality of care ($p = 0.001$).

Conclusions. The study identified several factors that could potentially be used to prevent out-of-pocket payments (OOPPs). Respondents who received chemotherapy and incurred OOPPs were more likely to be aged 60 years or older, retired and living in a regional capital. They were significantly more likely to postpone a cancer diagnosis or treatment due to anticipated financial costs, which suggests that healthcare services are not easily accessible. These patients did not know that they could get chemotherapy for free and were less satisfied with its quality. No differences were identified in relation to sex, educational attainment, or income level.

Keywords: healthcare financing; oncology; colon and rectal cancer; patient awareness; patient satisfaction; quality of healthcare services; accessibility of healthcare services.

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INTRODUCTION

The third most common cancer worldwide is colorectal cancer (CRC), according to Global Cancer Statistics 2022. It accounts for 9.6% of all cancers, with 1.9 million new cases. Furthermore, CRC is the second leading cause of cancer-related mortality, accounting for 904,000 deaths (9.3% of all cancer deaths) [1-2]. In Ukraine, CRC is also among the three most prevalent cancers in terms of both incidence and mortality. In 2023, 12,152 new cases were recorded. This accounted for 9.9% of all newly diagnosed cancers. This corresponds to the global proportion. A total of 6,395 deaths were recorded, accounting for 14.4% of all cancer-related deaths – a higher proportion than the global figure. Furthermore, depending on tumour location, the proportion of newly diagnosed CRC patients who did not survive the first year after diagnosis ranged from 20.9% to 25.9% [3]. These statistics may be partly due to patients delaying medical consultations because of worries about potentially ruinous costs for diagnosis and treatment. Since 2017, the diagnosis and treatment of cancer in Ukraine has been covered by the National Health Service of Ukraine (NHSU) via the Programme of Medical Guarantees (PMG) [4]. Chemotherapy for colorectal cancer is funded by the NHSU as part of a separate package entitled "Chemotherapy Treatment and Support for Patients with Cancer in Inpatient and Outpatient Settings", which is provided to patients free of charge. According to the World Health Organization and the World Bank, introducing the healthcare financing reform in Ukraine has improved access to healthcare services and provided greater protection against excessive out-of-pocket payments (OOPPs) [5].

It is well known that patients diagnosed with cancer often have to rely on informal and out-of-pocket payments to gain access to treatment. There are also documented cases of patients declining treatment because it is unaffordable [6-8]. Furthermore, O. Levenets *et al*. [9] have found that such practices are not only widespread in Ukraine, but are also generally characteristic of post-communist countries. More broadly, the financial toxicity associated with cancer treatment is a global problem. For instance, R. Lentz *et al*. [10] have highlighted the link between financial toxicity and patients' demographic and socioeconomic status, the type of treatment selected, and other factors in the United States. The authors identified female sex, younger age, and unemployment as particular contributing factors. L. Doshmangir *et al*. [11] observed that out-of-pocket payments (OOPPs) can lead to catastrophic expenditure for households. According to a systematic review of 19 studies, an average of 43.3% of cancer patients experienced catastrophic healthcare expenditure. An inverse relationship with the Human Development Index was identified, with a prevalence of 23.4% in countries with higher levels of human development, compared to 67.9% in countries with lower levels. The factors associated with financial hardship during CRC treatment have been investigated in retrospective, cross-sectional and prospective studies. G. Sadigh *et al*. [12] discovered that, among patients with early-stage CRC, the severity of financial hardship was linked to age, sex, educational attainment, employment status, receipt of chemotherapy, and other factors. S. Kircher *et al*. [13] also highlighted the link between the financial burden of CRC treatment and patients' household income and the socio-economic status of their area of residence. A. Rashidi *et al*. [14] examined interventions intended to reduce financial hardship among patients with cancer in a systematic review and meta-analysis. However, the findings indicated that these strategies had only a limited effect.

Therefore, it is important to identify the factors that cause patients to make out-of-pocket payments (OOPPs) despite the availability of guaranteed NHS funding. This study aimed to compare the social and demographic characteristics, as well as the subjective assessments, of two groups of patients with colorectal cancer who received chemotherapy. The groups were distinguished by their out-of-pocket payment habits.

MATERIALS AND METHODS

This study employed a cross-sectional design. A total of 459 patients who had received treatment for colorectal cancer under the "Chemotherapy Treatment and Support for Patients with Cancer in Inpatient and Outpatient Settings" medical guarantees package between 1 July 2023 and 30 June 2024 were surveyed. Both patients and relatives who had been directly involved in the treatment process were permitted to participate in the study. The questionnaire consisted of four sections. The first section was general information. The second section was about perceptions of informal payments. The third section was a review of the patient and medical history relating to colorectal cancer. The fourth section was about patient satisfaction. It was designed to take approximately 45 minutes to complete. The survey was conducted in person. It was done by independent interviewers. They did it in a private location. This was outside the healthcare facility. There were no third parties present. Respondents' answers were entered into an online questionnaire on a tablet. The respondents were told that they could choose whether or not to take part and that their answers would not be shared publicly and would keep their identity secret. No personal data were collected. All responses were used for analysis in an aggregated and anonymised form only. Patients were selected randomly. This was to ensure adequate regional representation within the sample. Almost all patients received treatment at 25 municipal healthcare facilities, 22 of which were oncology centres. These facilities were located in 21 Ukrainian regions and the city of Kyiv. Due to the ongoing war, the Donetsk, Luhansk and Kherson regions, as well as the Autonomous Republic of Crimea, were excluded from the sample.

The main thing we were comparing was whether patients had to make any out-of-pocket payments for their chemotherapy. The following payments were included: payments for diagnostic procedures; money or monetary equivalents given to a doctor or other healthcare professional; remuneration for a doctor, compensation for their time, expressions of gratitude, donations, or charitable contributions; the purchase of medicines or medical devices from a list provided by the healthcare facility; gifts in the form of goods, such as confectionery, alcohol, or coffee, or services, such as discounts or services provided free of charge; informal payments; and other similar forms of payment. The first group of respondents (n = 338) reported that they had not made any out-of-pocket payments (OOPPs), whereas the second group (n = 121) reported that they had. The groups were compared based on the following sociodemographic characteristics: age group, sex, educational attainment, employment status, average monthly income per household member, and type of settlement in which the patient resided. In addition, the study assessed respondents' perceptions of the accessibility of cancer care. It also looked at their awareness of services provided free of charge under the PMG. Finally, it examined patient satisfaction as an indirect indicator of the quality of healthcare delivery. To account for regional differences, patients were also classified into subregions based on the NHSU structure [15].

Statistical analysis was performed using the R programming language (version 4.3.1) with the EZR graphical user interface (version 1.64). The results are presented as absolute values (n) and relative frequencies (%). For certain variables, the number of responses was lower than the total sample size because some respondents either omitted answers or did not provide the relevant information. In such cases, the analysis for each variable was based on the available data. No computer programs were used to replace missing answers. The chi-squared test was used for comparisons between groups. Fisher's exact test was applied when expected frequencies were low. The Cochran–Armitage trend test was used to assess the presence of a linear trend. Statistical significance was set at $p < 0.05$ for all tests.

The study was done following the rules of the Declaration of Helsinki [16]. The study protocol was approved by the Bioethical Review and Research Ethics Commission of Bogomolets National Medical University (Protocol No. 206, 2026).

RESULTS AND DISCUSSION

The findings suggest that family members were more willing than patients to report out-of-pocket payments (OOPPs). Among those who did not report such payments, patients predominated, accounting for 190 out of 338 respondents (56.2%), compared to 148 family members (43.8%) (p = 0.001) (Table 1).

Table 1. Sociodemographic characteristics of respondents receiving chemotherapy for CRC, categorised by whether they made out-of-pocket payment

Factor	Category	OOPPs		p-value
		no	yes	
		n = 338	n = 121	
Questionnaire respondent	Patient	190 (56.2%)	46 (38.0%)	**0.001**
	Family member	148 (43.8%)	75 (62.0%)	
Age	under 40	17 (5.0%)	3 (2.5%)	0.103
	40-49	51 (15.1%)	10 (8.3%)	
	50-59	83 (24.6%)	26 (21.5%)	
	60-69	130 (38.5%)	61 (50.4%)	
	70+	57 (16.9%)	21 (17.4%)	
Sex	Female	103 (30.5%)	41 (33.9%)	0.495
	Male	235 (69.5%)	80 (66.1%)	
Education	Higher	105 (31.1%)	35 (28.9%)	0.904
	Secondary	51 (15.1%)	18 (14.9%)	
	Vocational education	182 (53.8%)	68 (56.2%)	
Employment status	Employed	123 (36.8%)	30 (25.4%)	0.055
	Retired	163 (48.8%)	72 (61.0%)	
	Unemployed persons of working age	48 (14.4%)	16 (13.6%)	
Average monthly income per member of the patient's household	below UAH 4,000	79 (26.1%)	24 (21.6%)	0.480
	UAH 4,001-7,000	83 (27.4%)	36 (32.4%)	
	UAH 7,001-10,000	57 (18.8%)	18 (16.2%)	
	UAH 10,001-19,000	72 (23.8%)	25 (22.5%)	
	More than UAH 19,000	12 (4.0%)	8 (7.2%)	
Type of settlement of residence	Regional capital	148 (46.2%)	62 (54.9%)	0.155
	Large city (population over 100,000)	48 (15.0%)	20 (17.7%)	
	Town or city with a population of up to 100,000	62 (19.4%)	18 (15.9%)	
	Village or urban-type settlement	62 (19.4%)	13 (11.5%)	

Table 1. *Continued*

Factor	Category	OOPPs		p-value
		no	yes	
		n = 338	n = 121	
Subregion	West	125 (37.0%)	27 (22.3%)	**< 0.001**
	South	17 (5.0%)	0 (0.0%)	
	North	27 (8.0%)	39 (32.2%)	
	East	57 (16.9%)	12 (9.9%)	
	Centre	112 (33.1%)	43 (35.5%)	

Source: compiled by the authors

No statistically significant difference in age was found between the groups (p = 0.103). As the age groups were ordered categories, Cochran-Armitage test for linear trend was performed. This yielded a chi-squared value of 4.9 and a p-value of 0.026. Therefore, the likelihood of patients reporting payments increased with age. This was particularly apparent in the 40-49 age group, where 15.1% of those who did not make payments and 8.3% of those who did were represented. By contrast, the distribution shifted towards a higher frequency of payments in the 60-69 age group, at 38.5% and 50.4% respectively.

The groups did not differ significantly in terms of sex distribution (p = 0.495) or educational attainment (p = 0.904). While the distribution of patients by employment status did not reach statistical significance (p = 0.055), there was a tendency for retired people to make payments more frequently (no OOPPs: 48.2%; OOPPs: 61.0%), whereas employed people were more likely not to make payments (no OOPPs: 36.6%; OOPPs: 25.4%). At the same time, no significant differences were found between the groups in terms of average monthly income per member of the patient's household (p = 0.48). Additional analysis revealed no linear trend (χ^2 = 0.449, p = 0.5). Therefore, there was no evidence that the frequency of OOPPs increased with income.

The groups did not differ according to patients' place of residence (p = 0.155). However, linear trend analysis indicated a significant difference (χ^2 = 4.745, p = 0.029). In other words, the frequency of OOPPs increased with the size of the settlement in which the patient lived. The most frequent OOPPs were made by residents of regional capitals, who accounted for 54.9% of all payments made, while the least frequent were made by residents of villages and urban-type settlements, who accounted for 11.5%. The distribution of patients by subregion revealed a statistically significant difference between the two groups of respondents (p < 0.001). Payments were less common in the West (no OOPPs: 37.0%; OOPPs: 22.3%) and the East (no OOPPs: 16.9%; OOPPs: 9.9%). Conversely, patients in the North were more likely to pay out of pocket (no OOPPs: 8.0%; OOPPs: 32.2%), whereas in the Centre, the proportions were almost identical (no OOPPs: 33.1%; OOPPs: 35.5%). The next section analysed patients' subjective assessments of treatment accessibility, awareness and satisfaction as indirect measures of healthcare service quality (Table 2).

Table 2. Perceived accessibility, awareness and satisfaction with chemotherapy, according to whether respondents made OOPPs

Factor/question	Category	OOPPs		p-value
		no	yes	
		n = 338	n = 121	
Did you postpone cancer diagnosis or treatment because you anticipated catastrophic expenditure?	No	304 (91.6%)	93 (78.2%)	**<0.001**
	Yes	28 (8.4%)	26 (21.8%)	
How aware are you of the services provided free of charge and guaranteed by the state for CRC chemotherapy in municipally and state-owned facilities?	Low	91 (27.2%)	56 (46.7%)	**<0.001**
	Moderate	87 (26.0%)	36 (30.0%)	
	High	157 (46.9%)	28 (23.3%)	
How satisfied are you with the quality of the CRC chemotherapy services you received?	Satisfied	279 (85.3%)	76 (70.4%)	**0.001**
	Neutral assessment	41 (12.5%)	25 (23.1%)	
	Dissatisfied	7 (2.1%)	7 (6.5%)	

Source: compiled by the authors

The study methodology was followed. The actual number of responses presented in Table 2, as in Table 1, could be lower than the total number of respondents. This is because of missing or unspecified responses.

The analysis was conducted using the available data for each variable. Patients who denied making out-of-pocket payments (OOPPs) had a significantly different assessment of healthcare accessibility to those who reported making them ($p < 0.001$). Patients in the latter group were more likely to acknowledge that they had postponed a cancer diagnosis or treatment (21.8% versus 8.4%). There was also a statistically significant difference ($p < 0.001$) and a strong linear trend ($\chi^2 = 22.641$, $p < 0.001$) in patient awareness of chemotherapy services provided free of charge. Thus, patients who were better informed about the PMG were less likely to make payments. Moreover, respondents who did not make OOPPs were more likely to be satisfied with the quality of healthcare than those in the other group ($p = 0.001$). A linear trend was also present ($\chi^2 = 12.925$, $p < 0.001$).

The study findings showed that the group of patients who made out-of-pocket payments (OOPPs) had certain differences and characteristics in common with the group that denied making such payments. Firstly, family members reported OOPPs more frequently than patients themselves ($p = 0.001$). This was probably because patients felt dependent on healthcare professionals and were therefore less inclined to report payments, particularly informal ones. According to K. Kroenke *et al*. [17], patients' assessments often correspond with family members' views and can be used to evaluate patients' conditions. It is important to note that around 73% of family members are directly involved in decisions concerning inpatient cancer treatment, while 25% report experiencing a financial burden because of the disease [18].

The work of O. Levenets *et al*. [6] established that older patients and women were more likely to make informal payments to access cancer care. The present study found no association between OOPPs and sex ($p > 0.05$). However, the Cochran-Armitage test revealed a statistically significant trend of increased payment frequency with age ($\chi^2 = 4.9$, $p = 0.026$). Older patients made payments more frequently than younger patients. T. Heisser *et al*. [19] demonstrated that the risk of colorectal cancer increases with age, with more complex cases requiring more expensive treatment. Nevertheless, the literature also suggests that the impact of age may have a threshold, with very elderly patients incurring lower costs due to receiving less aggressive treatment owing to their clinical condition and general age-related health deterioration. Nevertheless, the observed association may also be explained by payment practices inherited from the Soviet healthcare system that persist among older age groups. Furthermore, older age groups may be less aware that healthcare and PMG services are provided free of charge. A systematic review by Y. Zhang *et al*. [20] highlighted inadequate e-health literacy among cancer patients and identified age, sex, education, place of residence and other characteristics as influential factors.

The study found no statistically significant differences between the groups in terms of educational attainment ($p = 0.904$). This may be because patients tend to make irrational decisions when making decisions about cancer treatment, which override the effect of educational attainment. These decisions are instead based on the experiences of other patients, prevailing practices within their social environment, and other factors, as described by S. Whyte *et al*. [21] and M.S. Karuturi *et al*. [22]. However, O. Levenets *et al*. [6] found that higher education influenced patients' behavioural strategies regarding treatment. In the present study, the relationship between patients' employment status and the use of out-of-pocket payments (OOPPs) did not reach statistical significance ($p = 0.055$). Nevertheless, the findings suggest a tendency for retired people to be more likely to use OOPPs than the employed population. The risk of catastrophic treatment expenditure in these groups may be increased by this [11], as well as the risk of delays, incomplete receipt of healthcare services, or complete refusal of such services [22-24]. Consistent with this, patients who incurred OOPPs were significantly more likely to delay cancer diagnosis or treatment than those who did not ($p < 0.001$). The WHO reports that even before the full-scale invasion in 2022, 17% of Ukrainian households (2.5 million people) experienced catastrophic healthcare expenditure. This proportion was higher than the corresponding European levels, with the greatest impact on older individuals, retired individuals, and lower-income households. Overall, OOPPs were estimated to account for 48% of total healthcare expenditure [25]. This problem is further highlighted by the absence of any difference in payment frequency according to the average monthly income of the patient's household members ($p = 0.48$), and by the absence of a linear trend ($\chi^2 = 0.449$, $p = 0.5$). In other words, wealthier patients were no more likely to incur out-of-pocket patient payments (OOPPs). Therefore, it can be assumed that OOPPs pose a greater risk to the financial stability of less affluent households. However, a 2022 US study by G. Sadigh *et al*. [26] found that older age and higher patient income were associated with lower levels of financial toxicity.

The final sociodemographic indicators looked at were the links between OOPPs and the type of settlement and subregion where the patient lived. While no statistically significant difference was identified between groups according to settlement type ($p = 0.155$), a linear trend was observed ($p = 0.029$): payment frequency increased with settlement size. Residents of regional capitals made payments most frequently and this group was also the largest. As stated in the study methodology, 22 of the 25 healthcare facilities included in the study were oncology centres, which tend to be located in large cities or regional capitals. The issue of access to cancer care for residents of smaller settlements

and villages should also be considered. For instance, in 2024, while 80% of electronic prescriptions were issued in villages, only 22% were dispensed there [5]. A 2025 study also found that urban residence was an important factor influencing the strategies patients with cancer used to overcome barriers to accessing healthcare [6].

The distribution by subregion demonstrated a statistically significant difference ($p < 0.001$). Payments were less frequent in the East and West, and more frequent in the North. The eastern regions have been severely affected by the burden of war – this is because of the full-scale invasion. This may explain why OOPPs are less common there. Additionally, many internally displaced persons, including CRC patients, relocated to western Ukraine, which may have influenced the statistics in that region. Alternatively, OOPPs may have been less common in the West prior to the invasion. The northern subregion was also affected during the initial phase of the invasion, experiencing partial occupation before being subsequently liberated. The reasons for the high levels of OOPPs in this region therefore warrant further investigation.

The final section of the report included an analysis of subjective assessments. Patients who rated their knowledge of the PMG more highly were less likely to incur out-of-pocket expenses (OOPPs) ($p < 0.001$), and a strong linear trend was also observed ($p < 0.001$). It is also important to note that payments were associated with lower satisfaction with chemotherapy treatment ($p = 0.001$), and again, a strong linear trend was present ($p < 0.001$). Therefore, OOPPs may represent a factor that places additional psychological pressure on patients and reduces their satisfaction with the quality of healthcare services. However, S.Y. Zafar *et al.*'s [27] study of colorectal and lung cancer, which used data from 2003-2006, found no association between patients' perceptions of the quality of their treatment and financial toxicity. However, the current results align with other studies, which suggest that patients who are dissatisfied with the quality of their treatment are more likely to utilise a variety of strategies, including OOPPs [6].

The study therefore analysed the sociodemographic characteristics and subjective assessments of patients with CRC who received chemotherapy according to whether they made OOPPs. The findings were then compared with current literature evidence. Overall, in line with previous studies, the present study demonstrated the statistical significance of age and settlement size. At the same time, while sex, educational attainment and income have been identified as significant factors in some previous studies, they were not statistically significant in this study. It should be emphasised that respondent identity – whether patient or family member – was a statistically significant factor. This suggests the need to engage not only with patients themselves, but also with members of their immediate social and family environment.

CONCLUSIONS

1. The study identified several factors that could potentially be used to prevent OOPPs. A statistically significant linear trend was observed. This trend was towards an increased frequency of OOPPs. This increased frequency was with increasing age ($p = 0.026$). It was also with increasing settlement size ($p = 0.029$). However, there were no differences between the groups in terms of sex, educational attainment or income ($p > 0.05$). Family members were more likely than patients themselves to acknowledge that payments had been made ($p = 0.001$). Patients who made OOPPs were significantly more likely to postpone diagnosis or treatment (21.8% versus 8.4%, $p < 0.001$). A strong linear trend was identified: patients who were better informed about free services were less likely to make payments ($p < 0.001$). Patients who did not make OOPPs also reported a significantly higher level of satisfaction with the quality of care ($p = 0.001$).

2. Respondents who received chemotherapy and incurred out-of-pocket medical expenses (OOPPs) were more likely to be aged 60 years or older, retired, and living in a regional capital. Meanwhile, patients who made OOPPs were significantly more likely to postpone cancer diagnosis or treatment. This is because they anticipated substantial financial expenditure. This indicates limited accessibility of healthcare services for this group. They were also more likely to be unaware that chemotherapy was provided free of charge, and consequently were less satisfied with this service. No differences were identified in terms of sex, educational attainment or average monthly household income.

3. One possible approach to preventing OOPPs for chemotherapy services would be to improve patients' awareness of their right to free services and establish an accessible clinical care pathway. Future research should investigate OOPPs among CRC patients receiving chemotherapy in relation to the clinical manifestations of the disease, with the aim of developing a system to prevent OOPPs in healthcare facilities.

Study limitations. The statistical methods that were used in the present study included the χ^2 test, Fisher's exact test, and the Cochran-Armitage trend test, but multivariable analysis was not included. Future research will examine the association between patients' clinical characteristics during chemotherapy for CRC and OOPPs. This approach enables sociodemographic and clinical characteristics to be analysed separately and in detail without overloading the present paper. At the next stage, a multivariable analysis of selected sociodemographic and clinical patient characteristics will be conducted and the results presented in subsequent publications.

Practical significance. These findings could be used to raise patients' awareness of their rights and entitlements under the Programme of Medical

Guarantees, increase transparency within the healthcare system and reduce, and ultimately eliminate, out-of-pocket payments for services that have already been funded by the healthcare purchaser.

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CONFLICT OF INTEREST

None.

REFERENCES

[1] Bray F, Laversanne M, Sung H, Ferlay J, Siegel RL, Soerjomataram I, et al. Global cancer statistics 2022: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2024;74(3):229–63. DOI: 10.3322/caac.21834

[2] Cervantes A, Adam R, Roselló S, Arnold D, Normanno N, Taïeb J, et al. Metastatic colorectal cancer: ESMO Clinical Practice Guideline for diagnosis, treatment and follow-up. Ann Oncol. 2023;34(1):10–32. DOI: 10.1016/j.annonc.2022.10.003

[3] Fedorenko Z. Cancer in Ukraine, 2023-2024. Incidence, mortality, prevalence and other relevant statistics [Internet]. 2025 [cited 2026 January 7]. Available from: http://www.ncru.inf.ua/publications/BULL_26/PDF/Bull_26.pdf

[4] Law of Ukraine No. 2168-VIII. On State Financial Guarantees of Medical Care for the Population [Internet]. 2017 October 19 [cited 2026 January 7]. Available from: https://zakon.rada.gov.ua/go/2168-19

[5] World Health Organization. Health financing in Ukraine: Reform, resilience and recovery. Copenhagen: WHO Regional Office for Europe; 2024. 82 P.

[6] Levenets O, Chernysh T, Pavlova M, Groot W. Navigating cancer care in Ukraine: Patient's coping strategies to ensure access and quality. Cancer Causes Control. 2025;36:1775–83. DOI: 10.1007/s10552-025-02022-2

[7] Levenets O, Stepurko T, Pavlova M, Groot W. Coping mechanisms of Ukrainian patients: Bribes, gifts, donations, and connections. In: Polese A, Russo A, Strazzari F, editors. Governance beyond the law: The immoral, the illegal, the criminal. Cham: Springer International Publishing; 2019. P. 125–43. DOI: 10.1007/978-3-030-05039-9_7

[8] Levenets O, Stepurko T, Polese A, Pavlova M, Groot W. Coping strategies of cancer patients in Ukraine. Int J Health Plann Manage. 2019;34(4):1423–38. DOI: 10.1002/hpm.2802

[9] Levenets O, Stepurko T, Polese A, Pavlova M, Groot W. Coping with cancer in post-communist Europe: A systematic literature review. Health Policy Plan. 2021;36(10):1690–704. DOI: 10.1093/heapol/czab121

[10] Lentz R, Benson AB, Kircher S. Financial toxicity in cancer care: Prevalence, causes, consequences, and reduction strategies. J Surg Oncol. 2019;120(1):85–92. DOI: 10.1002/jso.25374

[11] Doshmangir L, Hasanpoor E, Abou Jaoude GJ, Eshtiagh B, Haghparast-Bidgoli H. Incidence of catastrophic health expenditure and its determinants in cancer patients: A systematic review and meta-analysis. Appl Health Econ Health Policy. 2021;19(6):839–55. DOI: 10.1007/s40258-021-00672-2

[12] Sadigh G, Duan F, An N, Gareen ID, Sicks J, Suga JM, et al. Financial hardship among patients with early-stage colorectal cancer. JAMA Netw Open. 2024;7(9):e2431967. DOI: 10.1001/jamanetworkopen.2024.31967

[13] Kircher S, Duan F, An N, Gareen IF, Sicks JD, Sadigh G, et al. Patient-reported financial burden of treatment for colon or rectal cancer. JAMA Netw Open. 2024;7(1):e2350844. DOI: 10.1001/jamanetworkopen.2023.50844

[14] Rashidi A, Jung J, Kao R, Nguyen EL, Le T, Ton B, et al. Interventions to mitigate cancer-related medical financial hardship: A systematic review and meta-analysis. Cancer. 2024;130(18):3198–209. DOI: 10.1002/cncr.35367

[15] National Health Service of Ukraine. Interregional departments [Internet]. [cited 2026 January 7]. Available from: https://nszu.gov.ua/pro-nzsu/mizregionalni-departamenti

[16] World Medical Association. World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human participants. JAMA. 2025;333(1):71–4. DOI: 10.1001/jama.2024.21972

[17] Kroenke K, Stump TE, Monahan PO. Agreement between older adult patient and caregiver proxy symptom reports. J Patient-Rep Outcomes. 2022;6(1):50. DOI: 10.1186/s41687-022-00457-8

[18] National Cancer Institute. Informal caregivers in cancer: Roles, burden, and support (PDQ®) – health professional version [Internet]. [cited 2026 January 7]. Available from: https://www.cancer.gov/about-cancer/coping/family-friends/family-caregivers-hp-pdq

[19] Heisser T, Simon A, Hapfelmeier J, Hoffmeister M, Brenner H. Treatment costs of colorectal cancer by sex and age: Population-based study on health insurance data from Germany. Cancers. 2022;14(15):3836. DOI: 10.3390/cancers14153836
[20] Zhang Y, Xu P, Sun Q, Baral S, Xi L, Wang D. Factors influencing the e-health literacy in cancer patients: A systematic review. J Cancer Surviv. 2023;17(2):425–40. DOI: 10.1007/s11764-022-01260-6
[21] Whyte S, Bray L, Chan HF, Chan RJ, Hunt J, Peltz TS, et al. Cognitive bias and therapy choice in breast reconstruction surgery decision-making. Plast Reconstr Surg. 2022;149(4):629e–37e. DOI: 10.1097/prs.0000000000008903
[22] Karuturi MS, Giordano SH, Hoover DS, Volk RJ, Housten AJ. Exploring and supporting older women's chemotherapy decision-making in early-stage breast cancer. J Geriatr Oncol. 2022;13(2):170–5. DOI: 10.1016/j.jgo.2021.11.018
[23] National Cancer Institute. Financial toxicity and cancer treatment (PDQ®) – health professional version [Internet]. [cited 2026 January 7]. Available from: https://www.cancer.gov/about-cancer/managing-care/track-care-costs/financial-toxicity-hp-pdq
[24] Bestvina CM, Zullig LL, Rushing C, Chino F, Samsa GP, Altomare I, et al. Patient-oncologist cost communication, financial distress, and medication adherence. J Oncol Pract. 2014;10(3):162–7. DOI: 10.1200/JOP.2014.001406
[25] World Health Organization. Can people afford to pay for health care? New evidence on financial protection in Ukraine 2023. Copenhagen: WHO Regional Office for Europe; 2023. 89 P.
[26] Sadigh G, Switchenko J, Weaver KE, Elchoufi D, Meisel J, Bilen MA, et al. Correlates of financial toxicity in adult cancer patients and their informal caregivers. Support Care Cancer. 2022;30(1):217–25. DOI: 10.1007/s00520-021-06424-1
[27] Zafar SY, McNeil RB, Thomas CM, Lathan CS, Ayanian JZ, Provenzale D. Population-based assessment of cancer survivors' financial burden and quality of life: A prospective cohort study. J Oncol Pract. 2015;11(2):145–50. DOI: 10.1200/jop.2014.001542

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Зв'язок соціально-демографічних характеристик пацієнтів з платежами з власної кишені під час хіміотерапії колоректального раку

Анотація

Актуальність. Колоректальний рак (КРР) входить до трійки найпоширеніших онкологічних патологій за захворюваністю та смертністю в Україні та світі. Попри реформу фінансування охорони здоров'я в Україні, проблема платежів з власної кишені (ПзВК) пацієнтів залишається актуальною.

Мета. Порівняти соціально-демографічні характеристики та суб'єктивні оцінки пацієнтів із КРР, які отримували хіміотерапію КРР, залежно від здійснення ПзВК.

Матеріали та методи. У поперечному дослідженні опитано 459 респондентів. Проаналізовано соціально-демографічні показники, суб'єктивну оцінку доступності послуг, поінформованість та задоволеність. Порівняння двох груп (з ПзВК та без) проведено із використанням критерію χ^2 та тесту Кохрейна-Армітажа у середовищі R з графічною оболонкою EZR.

Результати. Спостерігався статистично значущий лінійний тренд до зростання частоти ПзВК зі збільшенням віку ($p = 0,026$) та розміру населеного пункту ($p = 0,029$), проте групи не відрізнялися за статтю, освітою чи доходом ($p > 0,05$). Члени родини частіше за пацієнтів визнавали факти оплати ($p = 0,001$). Пацієнти з ПзВК статистично значимо частіше відкладали діагностику чи лікування (21,8 % проти 8,4 %, $p < 0,001$). Виявлено сильний лінійний тренд: краще поінформовані про безоплатні послуги пацієнти платили рідше ($p < 0,001$). Також пацієнти без ПзВК демонстрували статистично значимо вищий рівень задоволеності якістю допомоги ($p = 0,001$).

Висновки. Дослідження виявило низку асоційованих факторів, які потенційно можуть бути використані для попередження ПзВК. Респонденти, які отримували хіміотерапію та здійснювали ПзВК, частіше належали до вікової групи 60+, були пенсіонерами і проживали в обласному центрі. Вони достовірно частіше відкладали діагностику або лікування раку через очікувані фінансові витрати, що свідчить про низьку доступність медичної послуги. Такі пацієнти також були менш поінформовані про безоплатне хіміотерапевтичне лікування та менш задоволені його якістю. Відмінностей за статтю, освітою і рівнем доходу не виявлено.

Ключові слова: фінансування охорони здоров'я; онкологія; рак ободової та прямої кишки; поінформованість пацієнтів; задоволеність пацієнтів; якість медичних послуг; доступність медичних послуг.