CASE REPORT

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Demographic factors, cancer history, and stress coping strategies among colorectal cancer patients during the end of the COVID-19 pandemic – a cross-sectional association study

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Abstract

Objective. The aim of the is to determine the occurrence, severity, and correlates of distress in patients undergoing oncological treatment during the SARS-CoV-2 pandemic, focusing on the relationships with demographic factors, such as gender, age, residence, and treatment types. The relationships between distress and strategies for coping with cancer are also examined.

Materials and Method. A diagnostic survey method was utilised which incorporated such tools as the Distress Thermometer and the Mini-MAC Scale. The survey assessed stress severity and coping strategies among 104 oncological patients treated for colorectal cancer at the Oncology Centre of the Lublin Region, eastern Poland, during the last year of the pandemic.

Results. The average stress score was 6.96 [95% Confidence interval (CI) (6.60, 7.32)] with a standard deviation of 1,86. Women and younger patients exhibited higher anxiety and destructive coping styles. Analysis also revealed that cancer patients residing in rural areas reported higher levels of distress and more frequent use of destructive coping mechanisms, compared to their urban counterparts. Positive re-evaluation as a coping strategy increased with age. The study found that a history of cancer was associated with higher levels of distress and a greater use of destructive coping styles, regardless of the cancer stage or type of treatment.

Conclusions. Coping strategies in cancer patients are significantly associated with demographic factors, including gender, age, and place of residence. Distress levels in cancer patients are positively correlated with non-constructive coping strategies, such as anxious preoccupation and helplessness-hopelessness. High levels of distress underscore the need for routine distress screening and comprehensive psychosocial support.

Key words

SARS-CoV-2, pandemics, stress, coping strategies, psychological, psycho-oncology

INTRODUCTION

Stress is a critical element of human psychological functioning, influencing physical, mental, social, and spiritual well-being. Today, research continues to explore the complex mechanisms of stress, particularly in patients with such chronic diseases as cancer. Studies on stress mechanisms have evolved significantly, moving from the focus on biological stress responses, such as the activation of the autonomic nervous system leading to physiological effects, such as ltachycardia and elevated blood pressure, to a broader understanding that includes the psychological and social dimensions of stress [1]. Modern theories highlight the interplay between external stressors and internal coping mechanisms, with particular emphasis on the biopsychosocial impact on health outcomes [2].

Cancer remains a significant source of psychological distress, with patients facing emotional, physical, and social challenges. Psychological distress in cancer patients can fluctuate throughout the trajectory of the disease, influenced by invasive treatments, fear of recurrence, and social isolation [3]. Studies have consistently linked poor management of distress with worse health outcomes and increased mortality, making effective psychosocial support essential [4]. The demographic determinants of distress among cancer patients have also been the subject of research, indicating that factors such as gender, age, and place of residence play a role in its intensity [5].

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Recent studies have demonstrated that the COVID-19 pandemic has exacerbated psychological distress in cancer patients. Restricted access to medical services, increased social isolation, and heightened fears related to health have intensified anxiety and depression in this population [6]. During the pandemic, distress levels were closely associated with maladaptive coping strategies, such as anxious preoccupation, while adaptive strategies, e.g. positive reappraisal, may not always provide significant relief [7].

This study expands on the existing literature by examining the relationships between distress levels and coping strategies within the specific context of the COVID-19 pandemic. It offers new insights into how various demographic factors and challenges related to the pandemic correlate with the choice of coping mechanisms among cancer patients. Through a detailed analysis of demographic, clinical, and psychological variables, the aim of the study is to provide a comprehensive understanding of the factors associated with distress and coping strategies in this patient group. The findings are expected to contribute to the development of more tailored therapeutic interventions, addressing existing gaps in knowledge regarding the association between patient demographics and their psychological well-being during the pandemic.

MATERIALS AND METHOD

Study design and participants. A cross-sectional study was conducted at the Lublin Region Oncology Centre between 30 July – 9 November 2022, involving 104 cancer patients suffering from colorectal cancer. The survey questionnaires were distributed during patients' follow-up visits to the hospital's oncology outpatient clinic. Respondents were given the option to choose where to complete the questionnaires; if completed at home, the patients returned the completed questionnaires during their next visit. At each stage of the survey, they had the opportunity to ask questions, and to withdraw if they wished. In the study assumptions, it was determined that the minimum representative number of respondents would be 100. This decision was motivated by a reasonable compromise between the precision of the results and practical constraints (such as time, cost, and respondent availability), as well as by evidence suggesting that samples of this size typically provide sufficient statistical power, enable the use of classical statistical tests, and allow for basic subgroup analyses. This number was also considered realistic for achievement, based on retrospective reports from the National Cancer Registry prior to the study period [8].

Inclusion criteria. Participants were required to be over 18 years of age, have a confirmed diagnosis of colorectal cancer, and provide informed consent for participation in the study. Additionally, they had to be currently undergoing cancer diagnostics or treatment at a participating reference centre. Eligible treatment methods included surgical procedures, systemic therapies, radiotherapy, or combined treatment protocols.

Exclusion criteria. Exclusion criteria included: individuals under 18 years of age, without a diagnosis of colorectal cancer, did not provide consent to participate, with co-existing psychiatric disorders or neurodegenerative conditions, and those receiving palliative care. These medical conditions affect the perception, interpretation, and reporting of emotions (including stress and distress) which may distort findings based on subjective self-report measures. Moreover, they often co-exist with other health conditions, the use of psychotropic medications, or neurological cognitive impairments, all of which are difficult to control and may confound the relationships between variables. The absence of these disorders was assessed based on the patient's declaration.

All procedures were carried out in accordance with relevant guidelines and regulations. The study protocol was approved by the independent Bioethics Committee of the Medical University of Lublin (Reference No. KE – 0254/97/2021), and informed consent was obtained from all participants.

Instruments. A diagnostic survey method was employed, utilizing the Distress Thermometer (DT), the Mini-MAC Scale, and a socio-demographic data sheet to assess the study variables. The Distress Thermometer is a widely used, standardized screening tool designed to quickly assess psychological distress in cancer patients and survivors. Originally developed by the National Comprehensive Cancer Network (NCCN) in the United States, the DT is a single-item self-report measure that asks patients to rate their level of distress over the past week on a scale from 0 (no distress) to 10 (extreme distress). This tool is recommended by several professional organizations, including the Polish Psycho-Oncological Society, for evaluating the severity of distress in clinical and research settings [9].

A DT score of 5 or more is generally considered a threshold indicating significant distress, and suggests the need for further psychological evaluation or intervention. This cut-off is based on research demonstrating that a score of 5 or above effectively identifies patients who are likely to benefit from additional psychosocial support, such as counseling, psychiatric assessment, or referral to a support group [10].

The Mini-MAC questionnaire, translated and adapted into Polish by Z. Juczyński, is a shortened version of the Mental Adjustment to Cancer Scale (MAC) originally developed by Watson et al. [11]. This instrument includes 29 items designed to evaluate 4 different psychological responses to dealing with cancer:

1. Anxiety – identifies the level of fear and apprehension the patient experiences, viewing cancer as an uncontrollable threat that leads to significant emotional distress.
2. Fighting Spirit – reflects a pro-active and determined approach, in which the patient perceives the disease as a challenge to be overcome, fostering active engagement in treatment and recovery.
3. Helplessness-Hopelessness – indicates a sense of defeat and surrender, characterized by feelings of despair and inability to cope with the illness.
4. Positive Re-evaluation – refers to the patient finding meaning and personal growth through the experience of illness, often resulting in a sense of fulfillment regarding past life achievements [12].

The coping styles measured by the Mini-MAC are grouped into two broad categories: *constructive* (which includes 'fighting spirit' and 'positive reevaluation') and *destructive* (which encompasses 'anxiety' and 'helplessness-hopelessness') 12].

Statistical analysis. For statistical analysis, SPSS Statistics software version 25 was used, with a significance level set at $\alpha < 0.05$.

The statistical description of the obtained results included the mean, standard deviation, median, mean rank, skewness and kurtosis coefficients, as well as percentage distributions and frequencies. To make statistical inferences about the levels of coping strategies and distress, 95% confidence intervals for the mean and proportions were applied. Statistical inferences regarding differences between the obtained distribution of a quantitative variable and the normal distribution were conducted using the Kolmogorov-Smirnov tests. The Kruskal-Wallis H tests were used to assess the relationships between coping strategies and socio-demographic and medical factors. To examine the relationship between distress and individual strategies for coping with cancer, the Spearman correlation test was used. Regression analysis was employed to analyze the relationship between the intensity of distress and strategies for coping with cancer. The obtained results are presented graphically in bar charts and pie charts.

RESULTS

Characteristics of the study group. The gender distribution was relatively balanced, with a slight majority of female participants (57.69%) compared to male participants (42.31%). Most respondents lived in urban areas (56.73%). The age distribution varied, with 26.92% of patients aged 41–55, as many at 25–40 years old, 26.92% over 55, and 19.23% under 25. Educational levels also varied: college graduates – 44.23%, with a high school diploma – 20.19%, vocational education and primary education – 13.46%.

Half of the respondents were diagnosed during the pandemic. In terms of treatment, one-quarter of the respondents were treated with chemotherapy, one-fifth were still undergoing diagnostics, 16.35% were participating in combined therapy, and one-fifth were treated with radiotherapy or treated surgically. More than one-fifth of respondents had experienced cancer in their medical history.

These demographic characteristics provided a comprehensive basis for analyzing the impact of stress and coping mechanisms across different population segments.

Results of own research. The average stress score was 6.96 [95% CI (6.60, 7.32)] with a standard deviation of 1.86. Half of the respondents obtained scores no higher than 7, while the other half obtained scores at least equal to this value (Fig. 1).

A substantial majority of respondents reported experiencing problems with sleep, fatigue, and pain. Over half reported issues with memory, sexuality, and eating, while nearly half experienced nausea. Other common problems included swelling, tingling in the hands/feet, fever, appearance, constipation, changes in urination, diarrhea, washing, and dressing. About 25% of respondents experienced breathing problems, dry nose or excess secretion, and dry skin/itching, while approximately 20% experienced indigestion, oral lesions, and movement issues (Tab. 1).

Figure 2 illustrates the distribution of results from the Mini-MAC questionnaire. In all areas of coping with cancer, there were statistically significant differences between the obtained distribution of results and the normal distribution ($p < 0.05$). The skewness and kurtosis indices for these distributions were between -1 and 1, suggesting that these differences were not substantial. Most respondents exhibited a moderate level of anxiety. Half of the respondents had a low level of positive re-evaluation (confidence interval indicated a population percentage between 40.38% – 58.65%), while nearly half had a moderate level of positive re-evaluation [95% CI (38.46%, 56.73%)].

Table 2 presents descriptive statistics and normality testing for quantitative variables. A probability of $p<0.05$ indicates that the distribution differs from normal (scores on the scale: distress, fighting spirit, helplessness-hopelessness, constructive strategies).

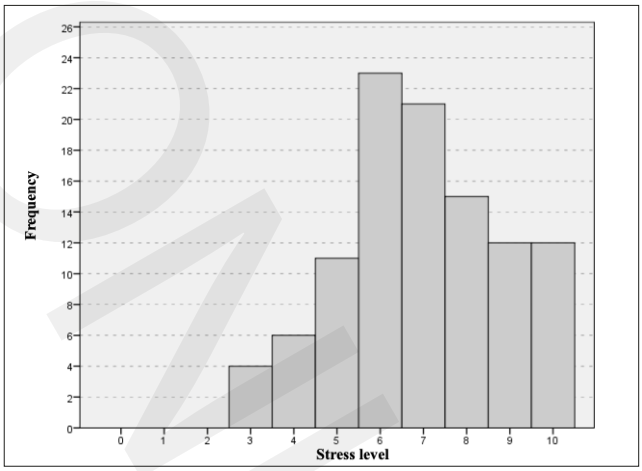

Figure 1. The arrow points to the lesion in the upper area of the right kidney on the abdominal ultrasound

Table 1. Number and percentage of physical problems of 104 patients examined

Physical problems	n	%	Confidence interval (CI) 95%	
			Lower limit	Upper limit
Indigestion	20	19.23	12.50	26.92
Lesions in the mouth	20	19.23	11.54	26.92
Movement	23	22.12	14.42	30.77
Breathing	24	23.08	15.38	31.73
Dryness in the nose or excess discharge	26	25.00	17.31	33.65
Dry skin/itching	26	25.00	17.31	32.69
Washing/deprivation	31	29.81	21.15	38.46
Diarrhea	32	30.77	22.12	39.42
Changes in urination	35	33.65	25.00	42.31
Constipation	35	33.65	25.00	43.27
Appearance	38	36.54	26.92	46.13
Fever	40	38.46	29.81	48.08
Tingling in the hands/foot	40	38.46	28.85	48.08
Sensation of swelling	41	39.42	30.77	49.04
Nausea	45	43.27	33.65	52.88
Eating	53	50.96	41.35	61.54
Sexuality	55	52.88	43.27	62.50
Memory/concentration	60	57.69	48.08	67.31
Pain	76	73.08	63.46	80.77
Fatigue	79	75.96	67.31	84.62
Sleep	88	84.62	77.88	91.35

n - number of observations; % - percentage

Table 2. Descriptive statistics and normality testing for quantitative variables of the studied 104 patients

	n	M	Min	Max	SD	Shapiro-Wilk	p
Distress	104	6.96	3.00	10.00	1.85	W=0.952	p=0.0009
Anxious Preoccupation	104	19.43	9.00	28.00	3.56	W=0.980	p=0.120
Fighting spirit	104	20.22	9.00	28.00	3.78	W=0.962	p=0.004
Helpnessness-Hopelessness	104	15.74	7.00	27.00	4.03	W=0.961	p=0.003
Positive Reappraisal	104	18.60	10.00	27.00	3.30	W=0.988	p=0.46
Constructive strategies	104	35.17	17.00	55.00	6.80	W=0.978	p=0.07
Non - constructive strategies	104	38.82	19.00	55.00	6.23	W=0.983	p=0.20

n – number of observations; M – Mean; Min – minimum value; Max – maximum value; SD – standard deviation; p – test probability

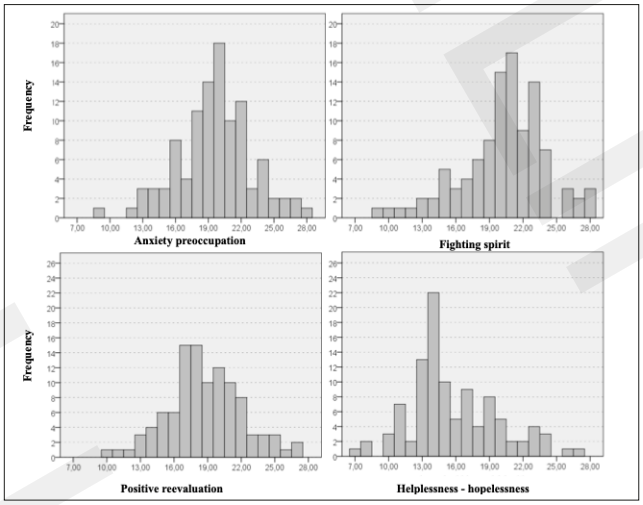

Figure 2. Axial CT scan shows the tumour indicated by the white arrow

Average score on the destructive style scale – 35.38 [95% CI (34.09, 36.66)], with a standard deviation of 6.59. Half of the respondents obtained scores no higher than 34. Average score on the constructive style scale – 39.03 [95% CI (37.81, 40.25)], with a standard deviation of 6.26. Half of the respondents obtained scores no higher than 39 (Fig. 3).

Statistically significant, moderate relationships were found between the respondents' gender and both anxiety preoccupation and destructive coping styles. Women reported higher levels of preoccupation with anxiety and destructive coping styles, compared to men. There were no statistically significant relationships between other variables indicating the level of stress and coping strategies and respondents' gender.

Age was significantly related to positive re-evaluation of experiences, with the highest scores reported by respondents

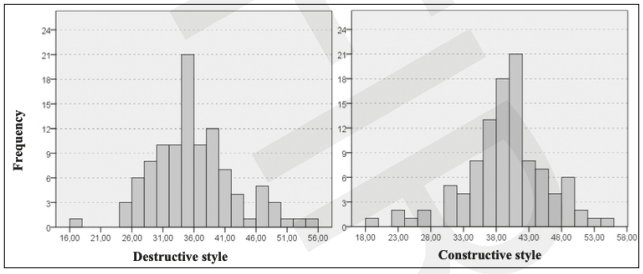

Figure 3. Frequency distribution of destructive and constructive coping style scores from the Mini-MAC questionnaire of 104 patients

over the age of 55, followed by those aged 41–55, 25–40, and under 25. *Post hoc* tests indicated significant differences in positive reevaluation between those under 25 and those aged 25–40 (p=0.002), 41–55 (p<0.001), and over 55 (p<0.001). Additionally, those aged 25–40 differed significantly from those over 55 (p = 0.001), and those aged 41–55 differed from those over 55 (p=0.012).

Table 3 presents the level of stress and coping strategies based on the respondents' place of residence. There were statistically significant, moderate relationships between the area of residence and feelings of helplessness and destructive coping styles, with higher values reported by those living in rural areas. No significant relationships were found between other variables indicating the level of stress and coping strategies and the place of residence.

Table 3. Stress and coping strategies according to the residence of 104 patients

Stress and coping	Residence	n	M	SD	Mr	Kruskal-Wallis H Test			
						H	df	p	ε2
Stress level	City	59	7.03	1.71	53.62	0.193	1	0.661	0.002
	Village	45	6.87	2.05	51.03				
Anxiety preoccupation	City	59	19.31	3.42	49.14	1.708	1	0.191	0.017
	Village	45	19.98	3.36	56.90				
Fighting spirit	City	59	20.36	3.82	53.64	0.198	1	0.656	0.002
	Village	45	20.16	3.73	51.00				
Helplessness-hopelessness	City	59	14.98	3.73	46.65	5.196	1	0.023	0.051
	Village	45	16.82	4.12	60.17				
Positive reevaluation	City	59	17.92	3.14	45.14	8.192	1	0.004	0.081
	Village	45	19.87	3.31	62.14				
Destructive style	City	59	34.29	6.28	47.05	4.475	1	0.034	0.044
	Village	45	36.80	6.79	59.64				
Constructive style	City	59	38.27	6.34	48.92	1.935	1	0.164	0.019
	Village	45	40.02	6.07	57.20				

n – number of observations; M – Mean; SD – standard deviation; Mr – mean rank; H – test result; p – test probability; df – degrees of freedom; ε2 – epsilon square

Analyses showed no statistically significant relationships between stress and coping strategies, and the timing of the respondents' cancer diagnosis, or the treatment methods used.

Table 4 shows correlation analyses between past cancer experience and stress and coping strategies. Statistically significant, moderate relationships were found between past cancer experience and destructive coping styles, with a higher intensity of destructive styles reported by those who had previously experienced cancer. No significant relationships were found between other variables indicating the level of stress and coping strategies and past cancer.

The Spearman test correlation test was used to examine the relationship between distress and individual strategies for coping with cancer,. The intensity of distress was significantly and positively correlated with non-constructive coping strategies for cancer – anxious pre-occupation (r=0.40; p<0.05), and with symptoms of helplessness and hopelessness (r=0.24; p<0.05). At the same time, no significant correlations were found between the intensity of distress and constructive coping strategies (Tab. 5).

Regression analysis was used to analyze the relationship between the intensity of distress and strategies for coping with cancer. Four quantitative variables were introduced into

Table 4. Stress and coping strategies according to the cancer diseases in the past of 104 patients

Stress and coping	Cancer diseases in the past	n	M	SD	Mr	Kruskal-Wallis H Test			
						H	df	p	ε2
Stress level	yes	21	7.00	2.00	54.05	0.071	1	0.790	0.001
	no	83	6095	1.83	52.11				
Anxiety preoccupation	yes	21	20062	3.07	61.38	2.308	1	0.129	0.023
	no	83	19034	3.44	50.25				
Fighting spirit	yes	21	19033	4.53	44.21	2.008	1	0.156	0.020
	no	83	20.51	3.54	54.60				
Helplessness-hopelessness	yes	21	17.10	3.78	62.19	2.754	1	0.097	0.027
	no	83	15.45	4.00	50.05				
Positive reevaluation	yes	21	19.29	3.68	55.43	0.251	1	0.617	0.002
	no	83	18.63	3.27	51.76				
Destructive style	yes	21	37.71	6.09	64.52	4.205	1	0.040	0.042
	no	83	3478	6.62	49.46				
Constructive style	yes	21	38.62	7.46	49.29	0.300	1	0.584	0.003
	no	83	39.13	5.96	53.31				

n – number of observations; M – Mean; SD – standard deviation; Mr – mean rank; H – test result; p – test probability; df – degrees of freedom; ε2 – epsilon square

Table 5. Correlation matrix of distress and cancer coping strategies of 104 patients (Spearman Rank Order Correlations, p<0,05)

Confronting variables in Spearman Test	Distress	Anxious Preoccupation	Fighting Spirit	Helplessness - Hoplessness
Distress	-	0.40*	0.01	0.24*
Anxious Preoccupation	0.40*	-	-0.17	0.53*
Fighting Spirit	0.01	-0.17	-	-0.49*
Helplessness-Hopelessness	0.24*	0.53*	-0.49*	-
Positive Reapraisal	-0.16	-0.26*	0.47*	-0.14

*p<0,05, **p <0.01

the model: anxious preoccupation, helplessness-hopelessness, fighting spirit, and positive re-appraisal. The model proved to be statistically significant (F (4.17)=6.08; p<0.002), and explained 16% of the variance in the intensity of distress (R2=0<19; Adjusted R2=0<16). In this model, one variable turned out to be significant – anxious preoccupation, which was positively related to the intensity of distress (b*=0.326; p<0.002).

DISCUSSION

The study aimed to investigate the prevalence, severity, and associated factors of distress among cancer patients during the COVID-19 pandemic, focusing on demographic factors such as age, gender, place of residence, cancer history, and specific coping strategies. The findings reveal complex determinants of psychosocial well-being in cancer patients amid the global health crisis, emphasizing the need for tailored psychological support interventions.

Gender as a key factor. The study found that gender played a significant role in distress levels and coping strategies among cancer patients. Women reported higher distress levels and were more likely to use non-constructive coping strategies, such as anxiety preoccupation, compared to men. This finding is consistent with the study by Carlson et al. (2019), which included over 3,000 cancer patients across 55 North American centres, showing that women experience higher psychological distress than men. This may be due to greater emotional involvement in family responsibilities and concerns about physical, functional, and cosmetic outcomes of treatment [13]. A recent systematic review has demonstrated similar associations, but emphasizes that contemporary care for patients with colorectal cancer extends beyond a simple binary framework. Healthcare professionals are tasked with understanding non-traditional expressions of masculinity or femininity, thereby enabling interventions to be tailored to the unique needs of each individual [14].

Age and coping strategies. Older patients showed a greater tendency to use constructive coping strategies, such as positive re-evaluation. This aligns with the findings of Johns et al. (2015), who conducted a one-year study of 160 persistently-fatigued cancer patients, which demonstrated that older patients display greater psychological resilience and acceptance of their condition [15]. A meta-analysis by Secinti et al. (2019) also suggests a positive association between age and constructive coping, indicating that older patients may be better equipped to manage cancer-related stress due to more extensive life experience [16]. These results suggest that age and gender should be considered when designing psychosocial interventions. Bottaro and Faraci, in their meta-analysis, highlight distinct findings, emphasizing that older patients more frequently exhibit fatalism and resignation compared to younger individuals. According to the authors, this may be attributed to the negative correlation between age and spirituality, prognosis of reduced life expectancy in older age; the age distribution of participants in the studies were included in the analysis. These findings underscore the importance of gaining a deeper understanding of the relationship between age and coping strategies in the context of cancer [17].

Place of residence – higher distress in rural patients. The current study found that patients residing in rural areas reported higher distress and more frequent use of destructive coping mechanisms, compared to urban residents. This finding aligns with research by Tsamakis et al. (2020), which assessed the impact of COVID-19 on over 1,200 cancer patients in Greece and revealed that rural patients experience higher distress due to limited access to healthcare resources and social support [18]. A study by Chen et al. (2024) also found that lower social integration in rural areas is associated with poorer psychosocial outcomes, highlighting the need for support networks and improved access to mental health services for rural cancer patients [19].

Cancer history and distress. The study shows that a history of cancer was linked to higher levels of distress and more destructive coping styles, regardless of cancer stage or type of treatment. This is in line with Romito et al. (2020), who assessed 300 lymphoma outpatients during the COVID-19 pandemic and found that patients with a history of cancer experienced greater psychological distress, particularly during periods of heightened external stress [20]. Rodriguez-Gonzalez et al. (2022) similarly found that a prior cancer diagnosis is associated with increased stress vulnerability in a study of 1,000 metastatic cancer

patients in Spain [21]. Furthermore, Bottaro and Faraci, in their meta-analysis, highlighted the importance of certain clinical characteristics associated with cancer that influence distress and coping strategies. Patients in the early stages of the disease, without metastases, are more likely to employ adaptive coping strategies. Knowledge about the diagnosis, disease, and treatment facilitates strategies, such as positive re-interpretation and planning [17].

Coping strategies and distress. The current study reveals that distress levels are positively correlated with non-constructive coping strategies, such as pre-occupation with anxiety, and feelings of helplessness. No significant correlations were found between distress and constructive coping strategies, such as positive re-interpretation. These findings align with Watson et al. (1994), who found that high scores on the anxious preoccupation and helplessness subscales were associated with elevated psychological distress [11]. Jacobsen et al. (2005) similarly showed that patients with high distress levels were more likely to engage in maladaptive coping, which exacerbated their psychological burden [10]. Research by Kim et al. (2010) also highlights the complexity of coping mechanisms and their varied impact on psychological outcomes [22].

Regression analysis in the current study indicated that anxious pre-occupation was the strongest predictor of distress intensity among the coping strategies analyzed. This aligns with the results of a meta-analysis by Kvillemo and Bränström (2014), which examined coping in breast cancer patients and identified anxious pre-occupation as a critical factor in predicting distress, particularly in the context of a life-threatening illness [23]. The lack of a significant relationship between distress and constructive strategies, such as positive reappraisal, suggests that while these strategies are valuable, they may not directly mitigate distress in all cases. This highlights the need for a nuanced approach to psychological interventions, suggesting that promoting adaptive strategies alone may not suffice. Interventions should also focus on reducing maladaptive coping mechanisms, particularly in patients exhibiting high levels of anxious preoccupation. Recent research by Obispo et al. (2023) further supports these findings by demonstrating that among patients with advanced cancer, cognitive avoidance was associated with lower levels of psychological distress, while strategies like anxious pre-occupation were linked to higher distress levels. The authors of the study suggest that focusing on reducing maladaptive coping behaviours, such as pre-occupation with anxiety, may effectively mitigate distress in these patients [24].

Impact of COVID-19 and long-term distress. The COVID-19 pandemic provided unique insights into the nature and persistence of psychological distress among cancer patients. Romito et al. (2020) reported that distress levels significantly increased during the pandemic among lymphoma patients, and remained elevated, particularly among those with limited social support [17]. Similar results were found by Ng et al. (2021) and Zhou et al. (2022), who observed that distress levels did not return to pre-pandemic levels, especially among patients lacking access to social support and virtual healthcare [25,26].

It should also be noted that the pandemic caused delays in cancer diagnosis and treatment, which may have led to worse treatment outcomes and additional stress for patients. These factors contributed to increased psychological stress and anxiety among oncology patients. This has been confirmed by numerous systematic reviews and meta-analyses conducted by Riera et al. (2021), Tegelia, Angelini and Astolfi (2022), and Shah et al. (2025) [27,28,29]. Studies have also shown that changes in active cancer treatment and restrictions on social contact were associated with a deterioration in patients' mental well-being. Patients expressed concerns about the impact of the pandemic on their treatment, and the increased risk of SARS-CoV-2 infection. Many reported heightened anxiety and depression during this period. Additionally, stay-at-home restrictions, fear of infection, limited travel opportunities (particularly burdensome for residents of rural areas), and reduced access to support services, including psychological counseling, had a negative impact on the mental health of oncology patients [30,31].

Clinical practice implications and future research. The findings of the study have several important implications for clinical practice. Routine screening for distress and maladaptive coping strategies is recommended as part of standard oncological care, with a focus on female, younger, and rural patients who may be at higher risk of distress. Tailored psychosocial interventions should focus on reducing non-constructive coping strategies, such as anxiety preoccupation, while promoting constructive strategies suited to individual patient characteristics.

The study also highlights the need for enhanced psychosocial support for patients with a cancer history, who may require more intensive mental health resources. Future research should investigate the effectiveness of specific interventions, such as cognitive-behavioural therapy (CBT) and mindfulness-based stress reduction (MBSR), which show promise in reducing maladaptive coping and distress [6, 7].

Limitations of the study. Limitations include the small sample size, which may limit the detection of subtle associations or interactions, reducing the statistical power of the study. The cross-sectional design also restricts causal interpretations of the observed associations, highlighting the need for longitudinal studies. Additionally, reliance on self-reported measures introduces potential bias, as older patients may under-report distress due to cultural norms or recall difficulties, while younger patients may over-report due to heightened health expectations. The lack of authoritative comparative data from a pre-pandemic study group complicates the isolation of the specific effects of COVID-19 on stress, and the findings may not be generalizable to other contexts. The only potential sources of data are publications by other authors, as already elaborated in the discussion section of the study. Further research should involve diverse samples and control for potential confounders to improve understanding of distress determinants among cancer patients.

By addressing these gaps, future studies could refine psychosocial care strategies and ultimately enhance the psychological well-being of cancer patients during both routine care and crises.

CONCLUSIONS

1. Coping strategies in cancer patients are significantly influenced by demographic factors, including gender, age, and place of residence. Women, younger patients, and those living in rural areas exhibit higher levels of anxiety and are more likely to use destructive coping styles, such as preoccupation with anxiety and helplessness-hopelessness. These findings suggest a need for targeted psychosocial interventions that address the specific needs of these groups.
2. A history of cancer is associated with higher levels of distress and more frequent use of maladaptive coping strategies. This finding highlights the importance of considering cancer history when designing psychosocial support programmes.
3. Distress levels in cancer patients are positively correlated with non-constructive coping strategies, such as preoccupation with anxiety and helplessness-hopelessness, while no significant correlation was found with constructive coping strategies, such as positive reappraisal. This highlights the importance of interventions that not only promote adaptive coping mechanisms, but also specifically target and reduce maladaptive coping styles to achieve significant reductions in distress.
4. The study found that positive reevaluation as a coping strategy increases with age. Older patients reported higher levels of positive reevaluation, suggesting that fostering this constructive coping strategy could improve psychological well-being across all age groups.
5. The high levels of distress observed in this study emphasize the importance of holistic care that includes mental health specialists. Regular screening for mental well-being and the development of standardized intervention protocols are crucial for the effective support of cancer patients.

List of abbreviations

SPSS – Statistical Package for Social Sciences
CI – Confidence interval
MBSR – Like Mindfulness-Based Stress Reduction
CBT – Cognitive-Behavioural Therapy
DT – Distress Thermometer
NCCN – National Comprehensive Cancer Network
MAC – Mental Adjustment to Cancer Scale
KS – Kołmogorow-Smirnow Test
SKEW – Skewness Coefficient
KURT – Kurtosis
n – number of observations
% – percentage*
LL – Lower Limit of the 95% confidence interval for the proportion
UL – Upper Limit of the 95% confidence interval for the proportion
M – mean
SD – standard deviation
Mr – mean rank
H – Kruskal-Wallis Test result
p – test probability
df – degrees of freedom
ε2 – epsilon square
M – Mean
Min – minimum value*
Max – maximum value*
SD – standard deviation
R – linear regression
R2 – determination coefficient
b – standardized regression coefficient
F – global statistics
p – test probability

REFERENCES

1. Roth AJ, Kornblith AB, Batel-Copel L, et al. Rapid screening for psychologic distress in men with prostate carcinoma: A pilot study. Cancer. 1998;82(10):1904–1908. https://doi.org/10.1002/(SICI)1097-0142(19980515)82:10<1904:AID-CNCR14>3.0.CO;2-X
2. Lazarus RS, Folkman S. Stress, appraisal, and coping. New York: Springer Publishing Company; 1984.
3. Marziliano A, Tuman M, Moyer A. The relationship between post-traumatic stress and post-traumatic growth in cancer patients and survivors: A systematic review and meta-analysis. Psychooncology. 2020;29(4):604–16. https://doi.org/10.1002/pon.5314
4. Deshields TL, Gregorio SW-D, Flowers SR, et al. Addressing distress management challenges: Recommendations from the consensus panel of the American Psychosocial Oncology Society and the Association of Oncology Social Work. CA Cancer J Clin. 2021;71(5):407–36. https://doi.org/10.3322/caac.21672
5. Veeraiah S, Kayser K, Sudhakar R. Psychosocial factors influencing distress among cancer patients in South India. J Psychosoc Oncol Res Pract. 2022;4(1). https://doi.org/10.1097/or9.0000000000000067
6. Zhang MF, Wen YS, Liu WY, et al. Effectiveness of mindfulness-based therapy for reducing anxiety and depression in patients with cancer: A meta-analysis. Medicine (Baltimore). 2019;98(45). https://doi.org/10.1097/md.0000000000017959
7. Leung J, Pachana NA, McLaughlin D. Social support and health-related quality of life in women with breast cancer: a longitudinal study. Psychooncology. 2020;29(4):836–43. https://doi.org/10.1002/pon.5362
8. Krajowy Rejestr Nowotworów: Raporty. https://onkologia.org.pl/pl/raporty (access: 2022.05.05).
9. Polish Psycho-Oncological Society. Guidelines for the Psychological Care of Cancer Patients. 2020.
10. Jacobsen PB, Donovan KA, Trask PC, et al. Screening for psychologic distress in ambulatory cancer patients: A multicenter evaluation of the distress thermometer. Cancer. 2005;103(7):1494–1502. https://doi.org/10.1002/cncr.20940
11. Watson M, Law MG, Santos MD, et al. The Mini-MAC. J Psychosocial Oncol. 1994;12(3):33–46. https://doi.org/10.1300/j077v12n03_03
12. Juczyński Z. Narzedzia pomiaru w promocji i psychologii zdrowia. Warszawa: Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego; 2001.
13. Carlson LE, Zelinski EL, Toivonen KI, et al. Prevalence of psychosocial distress in cancer patients across 55 North American cancer centers. J Psychosoc Oncol. 2019;37(1):5–21. https://doi.org/10.1080/07347332.2018.1521490
14. Zhou J, Wang Z, Chen X, Li Q. Gender Differences in Psychosocial Outcomes and Coping Strategies of Patients with Colorectal Cancer: A Systematic Review. Healthcare (Basel). 2023;11(18):2591. https://doi.org/10.3390/healthcare11182591
15. Johns SA, Brown LF, Beck-Coon K, et al. Randomized controlled pilot study of mindfulness-based stress reduction for persistently fatigued cancer survivors. Psychooncol. 2015;24(8):885–93. https://doi.org/10.1002/pon.3648
16. Secinti E, Tometich DB, Johns SA, Mosher CE. Meta-analysis of the effects of psychosocial interventions on survival time in cancer patients. Psychooncol. 2019;28(12):2381–93. https://doi.org/10.1002/pon.5253
17. Bottaro R, Faraci P. The influence of socio-demographics and clinical characteristics on coping strategies in cancer patients: a systematic review. Support Care Cancer. 2022;30(11):8785–8803. https://doi.org/10.1007/s00520-022-07267-0
18. Tsamakis K, Tsiptsios D, Ouranidis A, et al. Oncology during the COVID-19 pandemic: challenges, dilemmas, and the psychosocial impact on cancer patients. Oncology Letters. 2020;20(1):441–47. https://doi.org/10.3892/ol.2020.11633
19. Chen N, McGrath CB, Stopsack KH, et al. Social Integration and Long-Term Physical and Psychosocial Quality of Life Among Prostate Cancer Survivors in the Health Professionals Follow-up Study. J Cancer Surviv. Published online July 1, 2024. https://doi.org/10.1007/s11764-024-01632-0

20. Romito F, Dellino M, Loseto G, et al. Psychological Distress in Outpatients With Lymphoma During the COVID-19 Pandemic. Front Oncol. 2020;10:1270. https://doi.org/10.3389/fonc.2020.01270
21. Rodriguez-Gonzalez A, Velasco-Durantez V, Martin-Abreu C, et al. Fatigue, Emotional Distress, and Illness Uncertainty in Patients with Metastatic Cancer: Results from the Prospective NEOETIC_SEOM Study. Curr Oncol. 2022;29(12):9722–33. https://doi.org/10.3390/curroncol29120763
22. Kim Y, Baker F, Spillers RL. Cancer caregivers' quality of life: effects of gender, relationship, and appraisal. Psychooncol. 2010;19(10):1047–1054. https://doi.org/10.1002/pon.1656
23. Kvillemo P, Bränström R. Coping with breast cancer: a meta-analysis. PLoS One. 2014;9(11). https://doi.org/10.1371/journal.pone.0112733
24. Obispo B, Cruz-Castellanos P, Fernández-Montes A, et al. Coping strategies as mediators of uncertainty and psychological distress in patients with advanced cancer. Psycho-Oncol. 2023;32(11):1694–1701. https://doi.org/10.1002/pon.6219
25. Ng DWL, Chan FHF, Barry TJ, et al. Psychological distress during the 2021 COVID-19 pandemic: A comparison of cancer patients and the general population. Supportive Care in Cancer. 2021;29(10):6085–6095. https://doi.org/10.1007/s00520-021-06170-6
26. Zhou Y, Li W, Hong Y, et al. Longitudinal study of psychological distress among breast cancer patients during COVID-19 pandemic. Breast Cancer Research and Treatment. 2022;191(1):53–61. https://doi.org/10.1007/s10549-022-06486-8
27. Riera R, Bagattini ÂM, Pacheco RL, et al. Delays and Disruptions in Cancer Health Care Due to COVID-19 Pandemic: Systematic Review. JCO Glob Oncol. 2021;7:311–323. https://doi.org/10.1200/GO.20.00639
28. Teglia F, Angelini M, Astolfi L, et al. Global Association of COVID-19 Pandemic Measures With Cancer Screening: A Systematic Review and Meta-analysis. JAMA Oncol. 2022;8(9):1287–1293. https://doi.org/10.1001/jamaoncol.2022.2617
29. Shah R, Hanna NM, Loo CE, et al. The global impact of the COVID-19 pandemic on delays and disruptions in cancer care services: a systematic review and meta-analysis. Nat Cancer. 2025;6(1):194–204. https://doi.org/10.1038/s43018-024-00880-4
30. Sigorski D, Sobczuk P, Osmola M, et al. Impact of COVID-19 on anxiety levels among patients with cancer actively treated with systemic therapy. ESMO Open. 2020;5(5):e000970. https://doi.org/10.1136/esmoopen-2020-000970
31. Doege D, Frick J, Eckford RD, et al. Anxiety and depression in cancer patients and survivors in the context of restrictions in contact and oncological care during the COVID-19 pandemic. Int J Cancer. 2025;156(4):711–722. https://doi.org/10.1002/ijc.35204