

Anxiety, Perceived Stress and Self-Efficacy of Elderly Oncology Patients

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Abstract

The incidence of cancer in the world has reached a worrying level. In the majority of cancer types of cancer, the occurrence increases with age and reaches a peak between the age of 75-90.

In this context, this study aims to identify unfavorable psycho-behavioral patterns in elderly patients associated with increased vulnerability to cancer and how they directly influence the evolution of the disease in terms of healing or relapse.

The sample group included elderly patients diagnosed with cancer (n = 89, mean age = 71.2 years) hospitalized for chemotherapy treatment at the Oncology Institute "Al. Trestioreanu" Bucharest, as well as a control group (n = 87, mean age = 73.2), represented by cancer-free patients who were under the supervision of a family doctor.

Following a transversal research design, we evaluated the level of stress perception (Holmes-Rahe Scale), self-efficacy (SES questionnaire) and anxiety (Anxiety Inventory State-Trait, STAI1 and STAI 2 forms).

The results revealed that the group of patients with cancer had a significantly higher value of perceived stress compared to the control group (279.62 vs. 125.05, $F = 33.222$, $p < 0.0001$). Moreover, the self-efficacy scores were significantly lower in the study group (28.89 vs. 31.13, $F = 5.893$, $p < 0.016$), and for anxiety-trait, significantly increased compared to the control group (49.43 vs. 43.12, $F = 4.895$, $p < 0.028$).

In women from the study group, self-efficacy was significantly lower compared to the control group (28.38 vs. 30.72, $F = 6.995$, $p < 0.009$, $F = 6.995$), while the perceived stress was higher (269.15 vs. 114.70, $F = 30.377$, $p < 0.0001$). Men with cancer scored significantly higher in trait anxiety (53.10 vs 39.68, $F = 29.66$, $p < 0.0001$), state anxiety (48.033 vs 37.44, $F = 6.811$, $p < 0.012$) and perceived stress (300.23 vs 150.72, $F = 19.855$, $p < 0.0001$).

These results plead in favor of a significant relationship between the psycho-behavioral patterns and the presence of cancer in the elderly and also represent an argument for the inclusion of clinical psychologists in the multidisciplinary team caring for these patients.

Keywords: cancer, elderly, stress, self-efficacy, anxiety, psycho-oncology

INTRODUCTION

In the last decades, the incidence of cancer has reached an unprecedented level (1). World Health Organization (WHO) estimates an increase of approximately 70% new cancer cases per year, in the next 20 years, with the potential to reach a global incidence of 22 million (2).

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In Romania, the age-indexed incidence of cancer has been reported to be 224.2 at 100000 (3), with a number of deaths attributable to cancer having consistently reached in the last decade over 50,000 each year. Many cancer cases are discovered in a late phase, which brings into light the need to invest additional resources for cancer prevention, including the design of optimal strategies for cancer screening.

Currently, cancer is largely reported in literature to be caused by multiple factors, such as genetic configuration (4-6), or environmental and psycho-behavioral variables (7). In this sense, the integrative vision of cancer brings a lot of benefits for understanding the indestructible and bidirectional link between psychological factors and the nervous, endocrine and immune systems. This relationship was reported in 1975 by Dr. Robert Ader, under the concept of "psychoneuroimmunology" (8). Since then, many papers argued in favor of the relationship between stress and cancer as being mediated by the efficiency of the immune system, which is in turn influenced by cognitive and affective factors (11).

Among cognitive factors, self-efficacy plays a key role, many experts emphasizing the strong relationship between self-efficacy, cancer prevention and the adaptation to cancer (9-11). Self-efficacy can help an individual to better adjust to cancer and to the side effects of therapy, leading to improved sense of disease control (12, 13). Literature data show a direct proportionality between self-efficacy and the strength of the immune system (14). Inversely, low self-efficacy is reported to be associated with the defective functioning of the immune system, particularly of the cytotoxic T and NK cells (15). Based on self-regulation and self-efficacy theories, instruments such as the Cancer Behavior Inventory were developed as a measure of self-efficacy strategies for coping with cancer (16-18).

In what concerns negative affectivity, its role in the development of somatic diseases, particularly cancer, was also thoroughly reported (19-20) Anxiety, both as a trait and as a state, can generate vulnerability to cancer, through the chronic high secretion of corresponding hormones, such as cortisol and catecholamines, which in turn lead to a premature exhaustion of the immune system.

Taking into account the variable age, the most exposed population with cancer is over 65 years old. The incidence of cancer gets a peak in the age interval 75-90 (20), and the prevalence of metastasis is age-dependent, reaching a level of 63% for 75-year-old patients (21). In this context, the issue of psycho-behavioral determination of cancer disease is more relevant in elderly patients than in other age groups, to the extent that certain protective and risk factors tend to remain unchanged over time. In elderly cancer patients, in addition to low self-efficacy, trait anxiety and stress perception could play an important role in cancer etiopathogenesis (22, 23). Furthermore, the psychological "configuration" could be important in how the elderly cancer patient relates to the disease. In the literature, there is a growing concern about this topic, but in Romania the interest for this subject is still low. From this point of view, identifying correlations between these variables and the occurrence and prognosis of cancer is a potentially low cost-benefit objective that would facilitate the more specific psychological intervention on higher exposure groups.

OBJECTIVE AND HYPOTHESIS

The primary objective of this study was to identify several unfavorable psychological patterns associated with the increased cancer vulnerability of the elderly and whether they can directly influence the evolution of the disease to healing or relapse.

The first hypothesis was that elderly cancer patients would experience a high level of anxiety-trait and perceived stress, as well as a lower level of self-efficacy.

The second hypothesis assumes that gender differences may be significant among cancer patients, in the sense that women, in comparison to men, experience a higher level of state- and trait anxiety and lower self-efficacy.

MATERIAL AND METHOD

The design of the study was transversal. The study included 176 patients over the age of 65, from whom 89 patients underwent chemotherapy for cancer disease at the Oncological Institute "Alexandru Trestioreanu" - Bucharest (the case group) and 87 with similar demographic characteristics, but without cancer (the control group), were in the care of a family doctor. The case group comprised 59 women (66.30%) and 30 males (33.70%), with a mean age of 71.2 years (± 5.81). The control group comprised 62 women (71.27%) and 25 males (28.73%), with a mean age of 73.2 years (± 4.03).

The study was conducted with the approval of the Ethics Committee of the hosting hospital. Each person included in the study signed an informed consent sheet. The standardized questionnaires applied to both groups were:

State-Trait Anxiety Inventory (24, 25): has the advantage to provide high validity in investigating anxiety in both patients from medical, neuropsychiatric and surgery services and normal adults (26). Each scale - state anxiety (STAI 1) and trait anxiety (STAI 2) - has 20 questions, which reflect the perception of anxiety in threatening circumstances, or in general. The answers are provided on a 4-point Likert scale, from 1-"almost never" to 4-"almost always". The range of global scores for each scale is 20-80, the higher scores indicating greater anxiety. A cut point of 39-40 has been suggested to detect clinically significant symptoms for STAI 1 (at .783 sensitivity and .712 specificity), whereas a cut point of 44 seems optimal for STAI 2 (at .935 sensitivity and .574 specificity = 57.4) (27).

Self-Efficacy Scale (SES) (28): comprises 10 items and is designed to evaluate the individuals' beliefs about their ability to cope with the difficulties encountered in solving everyday tasks. The answers are provided on a 4-point Likert scale, from 1-"not at all true" to 4-"exactly true". The global self-efficacy score can be interpreted by allocating it into one of the following classes: very low self-efficacy: <25 points; low self-efficacy: 26-29 points; medium self-efficacy: 30-33 points; high self-efficacy: 34-37 points, and very high self-efficacy: > 38 points. In our study we took into account in the statistical interpretation the values corresponding to a global SES score <33.

Holmes-Rahe Scale for Perceived Stress (29): is based on the authors' assumption that every event causing a change in lifestyle may be perceived as a stress generator. In authors' view, the correlation between recent life changes and the occurrence of somatic disease is highly significant, suggesting the use of this instrument as a screening tool to measure the stress load. The three thresholds for perceived stress considered by Holmes-Rahe's Scale test are:

150 points or less = a low amount of life change and low susceptibility to stress-induced health breakdown; 150 to 300 points = 50% chance of health breakdown in the next 2 years; 300 points or more = 80% chance of health breakdown in the next 2 years. In our study, we included in the statistical analysis the scores of perceived stress > 150 points.

The statistical analysis was conducted running the SPSS software, more specifically the one-way ANOVA for the distribution of trait anxiety, state anxiety, self-efficacy and perceived stress.

RESULTS

The case group of patients had a higher perceived level of stress, compared to the control group (279.62 vs.125.05) ($F = 33.222$, $p < 0.0001$).

Table1. Means of the STAI2, SES and perceived stress

Cancer	Trait anxiety	Self- efficacy	Perceived stress
No	43.1264	31.1379	125.0575
Yes	49.4382	28.8989	279.6292

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At the same time, self-efficacy values were significantly lower in the study group (28.89 vs. 31.13, $F = 5.893$, $p < 0.016$), while the trait anxiety was significantly higher (49.43 vs. 43.12, $F = 4.895$, $p < 0.028$) (table 2).

Table2. Analysis of the ANOVA for trait anxiety, self-efficacy and perceived stress (cancer sample only)

Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig
Trait anxiety	485,859	1	485.859	4.895	.028
Self-efficacy	139,978	1	139.978	5.893	.016
Perceived stress	703345,883	1	703345.883	33.222	.000

In terms of gender differences, while we found no significant differences in anxiety in women, the female participants with cancer had significantly lower values of self-efficacy (28.38 vs. 30.72, $F = 6.995$, $p < 0.009$), and higher values of perceived stress (269,15 vs. 114,70, $F = 30,377$, $p < 0,0001$) (table 3).

Table3. Self-efficacy and perceived stress in women

	Cancer	n	Mean	Standard deviation	Standard Error	95% Confidence Interval for Mean		Min.	Max.
						Lower Bound	Upper Bound		
Self- efficacy	no	62	30.7258	3.59950	.45714	29.8117	31.6399	23.00	37.00
	yes	59	28.3898	5.89569	.76755	26.8534	29.9263	17.00	38.00
Perceived stress	no	62	114.7097	119.13753	15.13048	84.4544	144.9649	.00	489.00
	yes	59	269.1525	183.78340	23.92656	221.2583	317.0468	53.00	705.00

Male cancer patients had significantly higher anxiety -trait scores (53.10 vs 39.68, $F = 29.66$, $p < 0.0001$), anxiety-state (48,033 vs. 37,44, $F = 6.811$, $p < 0.012$) and perceived stress (300.23 vs. 150.72, $F = 19.855$, $p < 0.0001$) (Table 4).

Table4. Anxiety and perceived stress in men

	Cancer	n	Mean	Std. Deviation	Std. Error	95% Confidence interval for Mean		Min.	Max.
						Lower Bound	Upper Bound		
Trait anxiety	no	25	39.6800	11.22764	2.24553	35.0455	44.3145	26.00	60.00
	yes	30	53.1000	6.85490	1.25153	50.5403	55.6597	44.00	63.00
State anxiety	no	25	37.4400	11.37644	2.27529	32.7440	42.1360	22.00	64.00
	yes	30	48.0333	17.42072	3.18057	41.5283	54.5383	27.00	72.00
Perceived stress	no	25	150.7200	118.20551	23.64110	101.9272	199.5128	.00	493.00
	yes	30	300.2333	128.43560	23.44902	252.2747	348.1920	35.00	455.00

DISCUSSIONS AND CONCLUSIONS

Elderly cancer patients in our study, irrespective of their gender, seem to experience a high level of perceived stress and low self-efficacy, both occurring on a background of high trait anxiety. At the same time, several effects proved to be gender-specific: men diagnosed with cancer had higher trait and state anxiety scores, compared to women suffering from cancer. Also, the presence of cancer was associated to low self-efficacy especially in women, whereas stress perception was not influenced by the participants' gender.

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These results are subject to several study limitations: the design of the study was transversal, the number of participants was rather low and the questionnaires were self-administered, which brings into discussion the possible risks brought by misinterpretation of items or social desirability.

Despite these limitations, our results plead in favor of the efficacy of early and continuous psychological and social support in cancer care. As consistently reported in literature, both stress perception and increased anxiety related to cancer could be diminished if the patient is offered personalized psychological counseling. In selected cases, the provision of cognitive-behavioral psychotherapy, encouraging the development of more appropriate coping strategies or motivational counseling, could equally address these symptoms and also increase self-efficacy.

These goals can be achieved, as a whole, through the multidisciplinary approach of the cancer patient, and specifically through the inclusion of a psycho-oncologist in the medical team. This kind of specialist could have clear, well-defined responsibilities in providing psychosocial support to the cancer patient from the very beginning of the treatment, as well as in offering psychological counseling to the patient's family.

As a long-time strategy, specialists recommend the integration of the psychosocial component of care into the routine oncology care (30, 31, 32, 33). As literature data show, for the specific participants having taken part in this study, the involvement of the psycho-oncologist in reducing the level of perceived stress, the decrease of the state of anxiety and the increase of self-efficacy may bring huge benefits, both in terms of therapeutic compliance, overcoming the side effects of therapy and in increasing their quality of life (34).

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