# Anxiety and depression and cognitive coping strategies and health locus of control in patients with ovary and uterus cancer during anticancer therapy

**Aim of the study:** The crisis associated with cancer may contribute to the development of anxiety and depressive disorders. Contemporary psycho-oncology focuses on the psychological determinants of the cancer patients functioning to find which disease-coping strategies help the healing process, facilitate the establishment of a good therapeutic relationship and the process of adapting to difficult situations. Aim of the study was assess the psychological functioning of patients with cancer of reproductive organs in the cancer-treating process. The practical aim was to develop guidelines for psychological care dedicated to this group of patients.

**Material and methods**: The study was conducted in the Reproductive Organs Cancer Clinic in Institute of Oncology in Warsaw using a questionnaire consisting of: Demographic, Hospital Anxiety and Depression Scale (HADS), Multidimentional Health Locus of Control (MHLC), Cognitive Emotions Regulations Questionaire (CERQ).

**Results:** Seventy-eight patients aged 22 to 82 (average 54) were examined. Investigation of relationships between anxiety and depression and coping strategies showed: positive correlation of anxiety with self blame and rumination, positive correlation of anxiety and depression with catastrophizing, positive correlation of depression with blaming others, negative correlation of anxiety and depression with acceptance and positive refocusing, negative correlation of depression with refocus of planning and putting into perspective.

**Conclusions:** The results of this study indicate that there may be an indirect method of diagnosing anxiety and depression disorders in cancer patients by observing the coping strategies to cope with the difficult situation.

**Key words:** cancer, coping strategies, anxiety, depression, HADS, MHLC, CERQ.

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## Introduction

Cancer is one of the most frequent diseases (second only to cardiac diseases) and is one of the main causes of disability worldwide [1]. Cancers of reproductive organs are among the most common cancers in women [2]. Despite growing success in the field of cancer treatment this disease is still perceived as severe and life threatening. Cancer diagnosis and the need to undergo treatment are significant sources of stress for the patient and his or her family. The crisis associated with cancer and its treatment is a serious burden to the patient and may contribute to the development of anxiety and depressive disorders, and start destructive disease-coping strategies. The diagnosis of cancer of the reproductive organ causes not only the illness-related stress and the fear of suffering and death, but also introduces the fear of losing the attributes of femininity and fertility. In the case of gynaecological cancers radical surgical treatment involving the removal of the uterus and ovaries, and lymph nodes is often implemented. This type of treatment is perceived as highly invasive and mutilating. The consequences of radical removal of reproductive organs include psychological problems such as anxiety about losing femininity, lowered self-esteem and sense of sexuality, anxiety about the quality of intimate relationships with a partner, and lack of acceptance of one's body. If gynaecological cancer affects women at childbearing age, then the fear of infertility becomes an additional, very strong stressor. The need to have children and address maternal instincts often become more important than the need for survival and remission of the disease. Deprivation of these needs can cause serious anxiety-depressive disorders and induce destructive disease-coping strategies in women subjected to radical anti-cancer treatment [3, 4].

Coping with a stressful situation, such as the confrontation with cancer, can be perceived as part of the emotion-regulation process. Coping refers to "an individual's efforts to master demands (conditions of harm, threat, or challenge) that are appraised (or perceived) as exceeding or taxing his or her resources" [5]. Emotion-regulation is "all extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features to accomplish one's goal" [6]. The way people regulate their emotions can determine their psychological and physical functioning and wellbeing.

Contemporary psycho-oncology focuses on the study of the psychological determinants of the functioning of cancer patients to find what ways of coping with the disease help the healing process, facilitate the establishment of a good therapeutic relationship, delay the progression of the disease, and facilitate the process of adapting to difficult situations.

## Aim of the study

The aim of the study was to assess the psychological functioning of patients with cancer of reproductive organs, in the cancer-treating process. The psychological evaluation focused on analysis of the relationship between anxiety and depression and the type of cognitive emotion regulation strategy, health locus control, and the type of anticancer therapy in women with gynaecological cancer. The differences in the severity of anxiety and depression, the type of cognitive coping strategies, and health locus of control depending on the type of anticancer therapy: the surgery, chemotherapy, radiotherapy, and combined, were also analysed. The practical aim of the study was to develop guidelines for psychological care dedicated to this group of patients based on the results of the study.

## Material and methods

Seventy-eight patients aged 22 to 82 years (average 54 years) with ovarian or uterus cancer, treated in the Reproductive Organs Cancer Clinic in Institute of Oncology in Warsaw, were examined. The study had received a positive opinion from the Ethical Committee and was part of a clinical trial included in the Institute's scientific plan. The study was based on a single, voluntary, and anonymous questionnaire. The reference group, for certain types of analyses, consisted of 532 cancer patients from other hospital wards (aged from 19 to 91 years, mean age 54 years).

Subgroups of patients with different diagnoses were analysed using single factor ANOVA, and no significant differences were observed. The age distribution in the examined group and reference group was compared using the Kolmogorov-Smirnoff test and was found to be homogenous with significance < 0.05. There was no significant correlation between measured factors and the patients' age. For those reason the differences in age and diagnosis in the examined group were dismissed as statistically insignificant.

The study set the following research questions:
- Do anxiety and depression exhibit a relationship with cognitive coping strategies related to regulation of emotions in patients with gynaecological cancer.
- Do anxiety and depression exhibit a relationship with health locus of control in patients with gynaecological cancer.
- Are there differences in the severity of anxiety and depression, the type of cognitive coping strategies health locus of control related to the type of anticancer therapy: the surgery chemotherapy, radiotherapy, and combined.

The study was conducted using a questionnaire consisting of:
- Demographic questionnaire (age, type of illness, type of treatment).

- To measure the intensity of negative emotions – depression, anxiety, and anger – The Hospital Anxiety and Depression Scale (HADS) was used [7]. The Polish version was prepared by Majkowicz [8]. It is a screening tool for the diagnosis of anxiety disorders (7 items) and depression (7 items) in patients with somatic diseases. Results are calculated by summing the questions for the scale, the higher the score, the more severe the disorder. In the case of depression and anxiety the scores are in the range 0–21 points. The score from 0 to 7 points means no disturbances, from 8 to 10 points – limited states, and from 11 to 21 points – presence of the disorder. Cronbach's reliability coefficient in the study was: for anger scale 0.69 (patients' group = PG) and 0.71 (reference group = RG), for depression scale 0.75 (PG) and 0.76 (RG).
- Health locus of control was assessed using the Health Locus of Control Scale (MHLC) [9]. The Polish adaptation was prepared by Juczyński [10]. The questionnaire contains 18 statements that relate to three dimensions: (1) internal control – the belief that a person can control their own health, (2) the influence of others - the belief that the person's health condition depends on the actions of others, (3) chance – the conviction that the person's health is dependent on random factors: the case, luck, or fate. The questionnaire's results were calculated by summing the statements for each of the scales, in the range 6–36 points. The higher the score, the more the person is convinced that the factor contributes to the state of their health. Cronbach's alpha reliability coefficient in the study was: for internal control scale 0.65 (PG) and 0.69 (RG), for the influence of others scale 0.71 (PG) and 0.73 (RG), and for chance scale 0.62 (PG) and 0.61 (RG).
- Cognitive strategies for coping with stress were rated by using the Cognitive Emotions Regulations Questionnaire-short (CERQ-short) [11]. The Polish version was prepared by the authors of the study using the procedure of back translation method. The tool consists of 18 questions and allows the assessment how respondents think about the negative events in their lives. The questionnaire allows the identification of the use of nine cognitive strategies: self-blame, acceptance, rumination, positive refocusing, refocus of planning, positive reappraisal, putting into perspective, catastrophising, and blaming others. The higher the score, the more often the strategy is used to cope with stress. Cronbach's reliability coefficient in the study was: Blaming Yourself 0.66 (PG), 0.68 (RG), Accepting 0.72 (PG), 074 (RG), Ruminating 0.77 (PG), 0.75 (RG), Concentrating on Others, Positive Matters 0.81 (PG), 0.79 (RG), Concentrating on Planning 0.77 (PG), 0.78 (RG), Positive Reinterpretation 0.76 (PG), 0.77 (RG), Putting into Perspective 0.74 (PG), 0.71 (RG), Catastrophising 0.79 (PG), 0.73 (RG), Blaming Other People 0.75 (PG), 0.76 (RG).

The results were analysed using statistical tests and correlation analysis to assess the strength of the correlation and inter-group differences. When applicable the studied group was divided into subgroups based on treatment type. Levene's test was performed to verify the homogeneity of variance in the subgroups. Verification of the statistical significance of observed differences was

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performed using one-way ANOVA. In case of statistically significant differences between groups post-hoc analysis was performed using the NIR test (in case of homogeneity of variance) or Tamhane's test (in the case of non-compliance with a condition of homogeneity of variance). To analyse the relationship between the variables Kendall's tau-b rank correlation was used. In all calculations the significance was set to 5%. The statistical analysis was performed using SPSS PASW Statistics version 18.

## Results

Seventy-eight patients aged 22 to 82 years (average 54 years) were examined. Twenty-four patients had ovarian cancer, 48 patients had uterine cancer, and 6 had other diagnoses. Twenty-six percent of patients were treated surgically, 14% of patients were treated with chemotherapy, 8% of patients were treated with radiotherapy, 20% of patients were treated surgically and with chemotherapy, 14% of patients were treated with chemotherapy and radiotherapy, 13% of patients were treated surgically and with chemotherapy and radiotherapy, and 5% of patients were treated surgically and with radiotherapy.

The average measured anxiety was 8.21, and average depression was 6.09.

Forty-three point six percent patients had low anxiety, 28.2% patients had medium anxiety, and 28.2% showed high anxiety.

Sixty-six point seven percent patients had low depression, 16.7 % patients had medium depression, and 16.7% showed high depression.

The average measured intensity of cognitive coping strategies was: self-blame 5.01, acceptance 7.59, rumination 6.14, positive refocusing 6.55, refocus of planning 6.74, positive reappraisal 6.60, putting into perspective 5.74, catastrophising 5.21, and blaming others 3.56.

The average health locus of control was: internal 24.09, others 27.08, change 23.44.

Investigation of relationships between anxiety and depression and cognitive coping strategies' intensity showed: 1) positive correlation of anxiety with self-blame and rumination strategies, 2) positive correlation of anxiety and depression with catastrophising, 3) positive correlation of depression with blaming others, 4) negative correlation of anxiety and depression with acceptance and positive refocusing, and 5) negative correlation of depression with a refocus of planning and putting into perspective (Table 1).

Investigation of relationships between anxiety and depression and health locus of control found a negative correlation of depression with the conviction of the internal health locus of control (Table 2).

Investigation of the differences between the type of treatment and health locus of control found statistically significant ($p < 5\%$) differences between groups based on the treatment type as shown in the Table 3.

Investigation of the differences between the type of treatment and the severity of anxiety and depression, and cognitive coping strategies showed no statistically significant differences between groups.

**Table 1.** Tau-b Kendall correlation of anxiety and depression with coping strategies

| | | Anxiety (HADS) | Depression (HADS) |
|---|---|---|---|
| Self-blame | correlation coefficient | 0.213* | 0.103 |
| | significance | 0.011 | 0.221 |
| Acceptance | correlation coefficient | −0.257** | −0.192* |
| | significance | 0.003 | 0.024 |
| Rumination | correlation coefficient | 0.360** | 0.136 |
| | significance | 0.000 | 0.111 |
| Positive refocusing | correlation coefficient | −0.269** | −0.289** |
| | significance | 0.001 | 0.001 |
| Refocus of planning | correlation coefficient | −0.113 | −0.208* |
| | significance | 0.179 | 0.013 |
| Positive reappraisal | correlation coefficient | −0.145 | −0.149 |
| | significance | 0.088 | 0.078 |
| Putting into perspective | correlation coefficient | −0.102 | −0.277** |
| | significance | 0.225 | 0.001 |
| Catastrophising | correlation coefficient | 0.307** | 0.282** |
| | significance | 0.000 | 0.001 |
| Blaming others | correlation coefficient | 0.123 | 0.228** |
| | significance | 0.160 | 0.009 |

**Table 2.** Tau-b Kendall correlation of anxiety and depression with health locus of control (HLC)

| | | Internal HLC | Others HLC | Chance HLC |
|---|---|---|---|---|
| Anxiety | correlation coefficient | −0.065 | −0.017 | −0.044 |
| | significance | 0.422 | 0.831 | 0.590 |
| Depression | correlation coefficient | −0.248** | 0.004 | 0.082 |
| | significance | 0.002 | 0.965 | 0.314 |

**Table 3.** Treatment type and health locus of control

| Health Locus of Control | Treatment (I) | Treatment (J) | Mean difference (I-J) | Standard deviation | Significance |
|---|---|---|---|---|---|
| Chance | surgery | radiotherapy | −6.650* | 3.066 | 0.033 |
| | | chemotherapy + radiotherapy | −6.741* | 2.472 | 0.008 |
| | | surgery + chemotherapy + radiotherapy | −6.750* | 2.551 | 0.010 |

**Table 4.** Tau-b Kendall correlation between cognitive coping strategies and health locus of control

|  |  | Internal HLC | Others HLC | Chance HLC |
|---|---|---|---|---|
| Self-blame | correlation coefficient | 0.093 | −0.023 | −0.011 |
|  | significance | 0.261 | 0.783 | 0.892 |
| Acceptance | correlation coefficient | 0.180* | 0.090 | 0.035 |
|  | significance | 0.032 | 0.289 | 0.676 |
| Rumination | correlation coefficient | 0.030 | 0.114 | −0.025 |
|  | significance | 0.722 | 0.177 | 0.765 |
| Positive refocusing | correlation coefficient | 0.232** | 0.029 | 0.103 |
|  | significance | 0.005 | 0.726 | 0.216 |
| Refocus of planning | correlation coefficient | 0.103 | −0.013 | −0.116 |
|  | significance | 0.215 | 0.878 | 0.160 |
| Positive reappraisal | correlation coefficient | 0.225** | 0.115 | 0.078 |
|  | significance | 0.007 | 0.172 | 0.350 |
| Putting into perspective | correlation coefficient | 0.206* | −0.063 | 0.075 |
|  | significance | 0.013 | 0.449 | 0.363 |
| Catastrophising | correlation coefficient | −0.159 | 0.120 0.152 | −0.006 |
|  | significance | 0.056 |  | 0.944 |
| Blaming others | correlation coefficient | −0.187* | −0.054 | 0.018 |
|  | significance | 0.031 | 0.538 | 0.832 |

**Table 5.** Tau-b Kendall correlation between anxiety and depression and health locus of control

|  |  | Internal HLC | Others HLC | Chance HLC |
|---|---|---|---|---|
| Anxiety | correlation coefficient | −0.065 | −0.017 | −0.044 |
|  | significance | 0.422 | 0.831 | 0.590 |
| Depression | correlation coefficient | −0.248** | 0.004 | 0.082 |
|  | significance | 0.002 | 0.965 | 0.314 |

Investigation of the relations of cognitive coping strategies with health locus of control showed: 1) positive correlation of acceptance, positive refocusing, positive reappraisal, putting into perspective, and strategies with internal HLC, and 2) negative correlation of blaming others strategy with internal HLC (Table 4).

Investigation of the relations between anxiety and depression and health locus of control showed negative correlation of depression with internal health locus of control (Table 5).

## Discussion

In the described study a significant proportion of women showed signs of a mood disorder – anxiety and depression, which is consistent with the results of a study performed on patients with ovarian cancer by Bodurka-Bevers *et al.* [12] and slightly higher than in another study performed by Gonçalves *et al.* [13]. The presence of anxiety and depression is not only a problem in gynaecological cancer patients but also in patients with different types of cancer [14]. Two meta-analyses suggest that psychological intervention can be effective in reducing the symptoms and improving patients' quality of life [15, 16].

The examination of the relationship between negative emotions and cognitive coping strategies states that on the one hand using less adaptive strategies for coping with stress is associated with higher intensity of negative emotions – anxiety and depression, and on the other hand that using adaptive strategies for coping with stress is associated with their lower intensity. The results are as follows: 1) the higher the intensity of anxiety, the higher the intensity of the strategies of self blaming and rumination; 2) the higher the severity of anxiety and depression, the higher the intensity of the catastrophising, 3) the higher the severity of depression, the higher the intensity of the strategy of blaming others; 4) the lower the severity of anxiety and depression, the higher the intensity of the acceptance and positive refocusing, and 5) the lower the severity of depression, the higher the intensity strategy of refocus on planning and putting into perspective. There are some results available that confirm these two relationships – between using less adaptive coping and worse adjustment to cancer and between using adaptive strategies and better adjustment. Lutgendorf *et al.* [17] conducted research on patients with gynaecological cancer and came to the conclusion that using acceptance and positive reframing was associated with better quality of life, and better functioning and emotional wellbeing. Using disengagement coping, on the other hand, was associated with poorer doctor-patient relationships, poorer quality of life, and greater distress.

The obtained research results show the existence of the correlation of anxiety and depression and health locus of control of stating that the higher the severity of depression, the weaker the internal health locus of control. It is consistent with results of the study on locus of control and adjustment in cancer patients, which shows that a high level of internal control is associated with anxious preoccupation [18], while showing external locus of control and powerful other indicate being more compliant with their physicians' recommendations for testing and examination, in women with the risk of ovarian cancer [19].

The study shows that the treatment type does not affect the severity of anxiety and depression, or the intensity of cognitive coping strategies in patients treated for cancer of the reproductive organ. The method of treatment, on the other hand, is associated with a different type of health locus of control. Patients treated with surgery alone exhibited lower belief in the change of health locus of control compared with patients treated with radiotherapy, chemotherapy combined with radiotherapy, or a combination of surgery, radiotherapy, and chemotherapy.

Also the relationship between cognitive coping strategies and health locus of control was observed. It suggests that: 1) the higher the intensity of the acceptance, positive

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refocusing, positive reappraisal, and putting into perspective, the higher the severity of internal health locus of control; and 2) the lower the intensity of blaming others, the higher the severity of internal health locus of control. We could not find a similar study that either confirms or denies these results. The closest match we found was Fang et al., who conducted a study on perceived control, coping, and adjustment in women with ovarian cancer risk. It indicates that under conditions of high perceived control, problem-focused coping was associated with increasing distress and with poorer behavioural adherence [20].

## Conclusions

In patients with gynaecological cancer one can observe relationships between using less adaptive cognitive coping strategies and negative emotions, and using adaptive cognitive coping strategies and lack of negative emotions, which means that the psychological functioning of patients is associated with the way they perceive their disease and think about their current situation.

Anxiety disorders in patients with cancer are difficult to diagnose and treat, as they often manifest differently than in patients with other psychosomatic disorders. Oncological patients with high anxiety often do not show depressed mood. An additional difficulty in diagnosing is that patients do not always realise that the emotional state they are experiencing is anxiety, and they have a problem naming it. Therefore, often the only diagnostic criteria are the symptoms of somatisation or intensification of other symptoms such as primary cancer pain [4]. It is therefore essential to rapidly diagnose anxiety disorders and implement proper psychological care and pharmacological treatment, since it prevents the deterioration of the patient's functioning in the physical, psychological, and social areas.

In conclusion, the results of this study indicate that there may be an indirect method of diagnosing anxiety and depression disorders in cancer patients by observing the coping strategies used to cope with the difficult situation.

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## References

1. Stewart BW, Wild, CP. World Cancer Report 2014. IARC Nonserial Publication. 2014.
2. Woźniewski M. Kultura fizyczna w życiu ludzi chorych na nowotwory złośliwe. Adv Clin Exper Med 2002; 11: 103-8.
3. Grischke EA. Psychoonkologia w chorobach kobiecych z uwzględnieniem aspektów psychosomatycznych. In: Psychoonkologia Dormuller, Dietzfelbinger H. Elsevier U&P Wrocław 2009).
4. Trzebiatowska I. Zaburzenia psychiczne w chorobie nowotworowej. W: Psychoonkologia. de Walden Gałuszko K (ed.). Biblioteka Psychiatrii Polskiej, Kraków 2000; 71-81.
5. Monat A, Lazarus RS (eds.). Stress and coping: An anthology. Columbia University Press, New York 1991.
6. Garnefski B, Kraaij NV, Spinhoven P. Negative life events, cognitive emotion regulation and emotional problems. Personality and Individual Differences 2001; 30: 1311-27.
7. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. Acta Psychiatr Scand 1983; 67: 361-70.
8. Majkowicz M. Praktyczna ocena efektywności opieki paliatywnej – wybrane techniki badawcze. In: de Walden-Gałuszko K, Majkowicz M (red.). Ocena jakości opieki paliatywnej w teorii i praktyce. Akademia Medyczna Gdańsk, Gdańsk 2000; 21-42.
9. Wallston KA, Wallston BS, DeVellis R. Development of the multidimensional health locus of control (MHLC) scales. Health Educ Monogr 1978; 6: 160-70.
10. Juczyński Z. Wielowymiarowa Skala Umiejscowienia Kontroli Zdrowia – MHLC. In: Narzędzia pomiaru w promocji i psychologii zdrowia. Pracownia Testów Psychologicznych Polskiego Towarzystwa Psychologicznego, Warszawa 2001.
11. Garnefski N, Kraaij V. Cognitive emotion regulation questionnaire – development of a short 18-item version (CERQ-short). Personality and Individual Differences 2006; 41: 1045-53.
12. Bodurka-Bevers D, Basen-Engquist K, Carmack CL, Fitzgerald MA, Wolf JK, de Moor C, Gershenson DM. Depression, anxiety, and quality of life in patients with epithelial ovarian cancer. Gynecol Oncol 2000; 78 (3 Pt 1): 302-8.
13. Gonçalves V, Jayson G, Tarrier N. A longitudinal investigation of psychological morbidity in patients with ovarian cancer. Br J Cancer 2008; 99: 1794-801.
14. Mitchell AJ, Chan M, Bhatti H, Halton M, Grassi L, Johansen C, Meader N.Prevalence of depression, anxiety, and adjustment disorder in oncological, haematological, and palliative-care settings: a meta-analysis of 94 interview-based studies. Lancet Oncol 2011; 12: 160-74.
15. Osborn RL, Demoncada AC, Feuerstein M. Psychosocial interventions for depression, anxiety, and quality of life in cancer survivors: meta-analyses. Int J Psychiatry Med 2006; 36: 13-34.
16. Sheard T, Maguire P.The effect of psychological interventions on anxiety and depression in cancer patients: results of two meta-analyses. Br J Cancer 1999; 80: 1770-80.
17. Lutgendorf SK, Anderson B, Rothrock N, Buller RE, Sood AK, Sorosky JI. Quality of life and mood in women with gynecologic cancer. Cancer 2000; 89: 1402-11.
18. Watson M, Pruyn J, Greer S, van den Borne B. Locus of control and adjustment to cancer. Psychol Rep 1990; 66: 39-48.
19. Franco K, Belinson J, Casey G, Plummer S, Tamburrino M, Tung E. Adjustment to perceived ovarian cancer risk. Psychooncology 2000; 9: 411-7.
20. Fang CY, Daly MB, Miller SM, Zerr T, Malick J, Engstrom P. Coping with ovarian cancer risk: The moderating effects of perceived control on coping and adjustment. Br J Health Psychol 2006; 11 (Pt 4): 561-80.
21. de Walden-Gałuszko K. Problemy psychologiczne choroby nowotworowej. In: Wybrane zagadnienia psychoonkologii i psychotanatologii. Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk 1992; 9-17.

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