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Patient mental adjustment to selected types of cancer

Urszula Religioni, Aleksandra Czerw, Andrzej Deptała

[1]Public Health Department, Medical University of Warsaw
[2]Department of Cancer Prevention, Medical University of Warsaw

Summary

Introduction: Physical symptoms related to cancer are associated with various mental conditions. An adopted attitude towards pain and disease affects the quality of life of patients and may even decide about the final outcome of therapy. Objective: The objective of the study was to assess the degree of mental adjustment of patients diagnosed with breast, lung, colorectal and prostate cancer. The analysis also covered the effect of socioeconomic factors on mental adjustment in patients in the above groups.

Materials and Methods: The study included 902 patients treated on an outpatient basis at the Center of Oncology, the Maria Skłodowska-Curie Institute in Warsaw, in the year 2013. The study participants were patients diagnosed with breast, lung, colorectal and prostate carcinoma. The Paper and Pencil Interview (PAPI) technique was applied. The questionnaire interview included demographic-type questions (socioeconomic variables) and the Mini-Mental Adjustment to Cancer (Mini-MAC) scale, which measures the degree of mental adjustment to disease.

Results: The highest scores in the anxious preoccupation and helplessness-hopelessness subclasses were those of the lung, colorectal, breast and prostate cancer patients. In breast and lung cancer study participants, differences between individual categories distinguished due to socioeconomic features proved statistically insignificant. However, significant dependencies were observed between mental adjustment to disease and chemotherapy in the past year; though, the results differ with respect to the primary site.

Conclusions: The primary site affects patient adjustment to disease. Socioeconomic factors in the area of mental adaptation differentiate colorectal carcinoma patients.

Key words: mini-MAC scale, mental adjustment to disease, quality of life

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Introduction

A cancer diagnosis is not a one-time source of stress for the patient. Disease typically triggers off long-term consequences, including treatment, coping with adverse events, decreased quality of life, and often a reduced ability to work and a less active social life.

Physical symptoms related to cancer are associated with various mental conditions [1]. In this respect, reacting to appearing psychological symptoms is very important, as it can, to a great extent, shorten the time needed to regain self-reliance. An attitude adopted towards pain and disease affects the quality of life of patients and sometimes even therapy outcomes [2].

Mental adjustment to disease is expressed both in cognitive processes and in real patients' behaviour. Respective types of cognitive processes and behaviours express different levels of stress and emotion intensities, and in particular the ways of coping with one's own disease. [3]. Subject to individual personal traits and previous experience of the patients, the degree of their adjustment to disease (defined as a reaction to the news about cancer), may differ significantly, and what is more – it tends to change over time, depending on the treatment stage [4]. Therefore, adjustment to disease is not a single activity, but rather a process which aims at restoring patients' inner balance under new circumstances and at removing emotional discomfort [5].

The most common cases of cancer in Poland are lung, prostate and colorectal carcinoma (in men), and breast, colorectal and lung carcinoma (in women) [6]. However, studies investigating mental adjustment of patients to cancer carried out to date focused mainly on the relation between a chosen strategy and the quality of life [4, 7–9]. There were also analyses describing the ways of adapting to disease in a selected group of patients, e.g. in a pool of breast cancer women [10, 11], prostate patients [12, 13], colorectal cancer patients [14], or lung cancer patients [15, 16]. It is much more rare for researchers to analyze the effect of socioeconomic variables on a chosen strategy of adjustment to disease or to compare strategies selected by patients suffering from various types of carcinoma.

The results of studies evaluating the influence of the patients' attitudes on the efficacy of cancer treatments indicate the dependency of the course of disease or efficacy of treatment, and a positive attitude, willingness to fight the disease, or the level of anxiety and patient's fear [17–19]. In view of the above, in our study we applied a questionnaire involving the following subscales: the fighting spirit, positive re-evaluation, anxious preoccupation and helplessness-hopelessness.

Aim

The underlying objective of our research was to determine a correlation between the primary site (primary cancer) and mental adjustment to disease. Our analysis also included dependencies between socioeconomic variables and mental adjustment in breast, lung, colorectal and prostate cancer patients. Furthermore, we conducted a verification of the influence of chemotherapy on mental adjustment to disease.

Material and Method

The study included 902 outpatients treated at the Centre of Oncology – the Maria Skłodowska-Curie Institute in Warsaw, in 2013. The study group consisted of patients diagnosed with breast, lung, colorectal and prostate carcinoma. The study group was selected based on the incidence of a given type of cancer in Poland. We applied the Paper and Pencil Interview (PAPI) technique. The questionnaire interview included demographic-type questions (socioeconomic variables) and the Mini-Mental Adjustment to Cancer (Mini-MAC) scale. The Mini-MAC questionnaire was developed by Watson et al. [20]. It consists of 29 statements, and it measures 4 ways of coping with disease:

1. Anxious preoccupation (indicative of disease-related fear and perceiving disease as a worrying, uncontrolled, and threatening phenomenon);
2. Fighting spirit (treating disease as a challenge and undertaking active actions, such as seeking replacement therapies, which often include dancing, travelling or physical activities);
3. Helplessness-hopelessness (manifested by feeling adrift and impotent, and in consequence, withdrawing from social life and professional activity);
4. Positive re-evaluation (changing one's attitude towards life and appreciating its value in view of the progressing disease).

Anxious preoccupation and helplessness-hopelessness are a passive (destructive) style of coping with disease, whereas the fighting spirit and positive re-evaluation refer to an active (constructive) style of coping with cancer.

Each of the Mini-MAC statements is assessed by the respondent on a four-point grading scale ranging from 1 (definitely not) to 4 (definitely yes). Points in each strategy are calculated separately on the basis of the total scores obtained for particular statements and the final results may be between 7 and 28 points. The higher the score, the more intense behaviour typical for a given coping strategy [21].

To analyze the Mini-MAC scale's reliability Cronbach's alpha cofactor was employed. The reliability coefficient for the total test was 0.79. Afterwards, reliability coefficients were determined, separately for every subscale (Table 1).

Table 1. **Reliability of the Mini-MAC subscales**

Mini-MAC subscale	Cronbach's alpha in own study	Cronbach's alpha in a standardized study
Anxious preoccupation	0.86	0.88
Fighting spirit	0.77	0.90
Helplessness-hopelessness	0.83	0.92
Positive re-evaluation	0.55	0.87

We found out that reliability was high in the case of anxious preoccupation and helplessness-hopelessness. The values of these coefficients were slightly lower than those from the standardization sample covering 143 oncological patients. We also demonstrated a somewhat lower reliability in the fighting spirit subscale. As far as positive re-evaluation is concerned, the difference between reliability coefficients was significant [21].

The Mini-MAC scores were juxtaposed with socioeconomic characteristics of the respondents: gender, education, professional status, place of residence, net income-per-household member, and chemotherapy (presence or absence) in the past 12 months.

We selected our sample on the basis of respondents' availability. We conducted the study with patients available at a given time and place at the Centre of Oncology – the Maria Skłodowska-Curie Institute in Warsaw. The selected method allowed us to obtain a sample with representative characteristics, thus it comprised different categories of respondents, based on the randomness of their visits in the centre. The sample included patients with diverse primary sites, of different genders, places of residence, and levels of education and income.

One essential feature of the sample in this large quantitative study is its size. 902 respondents participated in the study, hence we obtained reliable material for statistical comparisons and minimized the risk of the effect of extreme cases on mean scores.

For the purpose of the statistical analysis of differences between the study groups' results, we used a single factor analysis of variance (ANOVA) and the Kruskal-Wallis one-way analysis of variance, where the dependent variables were: primary cancer, individual socioeconomic factors, and chemotherapy in the past 12 months. For a comparison of differences between two study groups we employed the Mann-Whitney U test. $P < 0.05$ was considered statistically significant.

Results

The sample structure with regards to the primary site is displayed in Table 2.

Table 2. **Sample structure with regards to primary site**

Primary site	Sample
Breast	193
Lung	243
Colon/rectum	238
Prostate	228
Total	902

The primary site clearly affected the results obtained in all Mini-MAC subscales (Table 3–6); the statistical significance for the anxious preoccupation subscale was $p = 0.000$, for the fighting spirit: $p = 0.000$, for the helplessness-hopelessness: $p = 0.000$, and for the positive re-evaluation subscale: $p = 0.249$. The following groups of patients, in the descending order, presented the highest scores in the anxious preoccupation and helplessness-hopelessness subscales: lung, colorectal, breast, and prostate cancer. The study findings were evidently top in the first group, corresponding in the group of colorectal and breast cancer patients, and clearly lowest in the last group. We noted no result inversion in the fighting spirit subscale. We reported higher results in this subscale in respondents diagnosed with breast cancer (23.43) and colorectal cancer (23.42); lower scores, in turn, were found in prostate cancer (22.46) and lung cancer (21.91) patients.

Table 3. **Anxious preoccupation in various groups of respondents**

Anxious preoccupation	N	Mean	SD
Breast	193	15.91	4.97
Lung	243	16.98	5.35
Colon/rectum	237	15.98	4.67
Prostate	228	14.01	4.85
Total	901	15.73	5.08

SD – Standard deviation

Table 4. **Fighting spirit in various groups of respondents**

Fighting spirit	N	Mean	SD
Breast	193	23.43	3.21
Lung	243	21.91	4.73
Colon/rectum	238	23.42	3.64
Prostate	228	22.46	3.44
Total	902	22.77	3.89

SD – Standard deviation

Table 5. **Helplessness-hopelessness in various groups of respondents**

Helplessness-hopelessness	N	Mean	SD
Breast	193	11.89	4.10
Lung	242	13.55	4.48
Colon/rectum	237	12.39	4.26
Prostate	227	11.39	4.23
Total	899	12.34	4.35

SD – Standard deviation

Table 6. **Positive re-evaluation in various groups of respondents**

Positive re-evaluation	N	Mean	SD
Breast	193	22.05	3.09
Lung	243	21.40	4.11
Colon/rectum	238	22.31	2.83
Prostate	228	22.04	2.99
Total	902	21.94	3.32

SD – Standard deviation

In breast and lung cancer study participants, differences between individual groups distinguished on the basis of socioeconomic features proved insignificant. Statistical significance was reported solely for professional status in the positive re-evaluation subscale in breast cancer patients and in the anxious preoccupation subscale in lung cancer patients. A small difference between the mean scores and a large difference in the number of employed and retired respondents diagnosed with lung cancer raise additional doubts as to the significance of our findings.

The picture changes if the primary site is the colon/rectum. Results in some subscales were differentiated not only by respondents' professional status, but also by their place of residence and net income-per-household-member. Scores of respondents in employment and on a pension were highly coherent and the only difference in test scores which was statistically significant was reported in the case of positive re-evaluation: the mean for the retired was 22.74; while the mean for the employed was 21.76. The size of the place of residence differentiated the anxious preoccupation and positive re-evaluation subscales, even though no pattern or tendency could be noted. The lowest score in the former subscale was recorded in inhabitants of the largest cities: more than 500,000 (14.51) and less than 500,000 inhabitants (15.56). We found very similar results, i.e. 16.48 and 16.47, in inhabitants of large towns: up to 100,000 and up to 50,000 inhabitants, and in individuals living in the countryside (16.93). We observed the top mean score (17.68) in inhabitants of small towns. The mean values in the positive re-evaluation subscale exhibited a decreasing tendency, starting with countryside residents (23.04), through small town residents (22.23), large towns of up to 50,000 (22.06), and large towns of up to 100,000 (20.78). Respondents from the largest cities scored slightly higher, i.e. 22.00 in the case of inhabitants of cities of less than 500,000 citizens and 22.61 for respondents from cities of a population of more than 500,000 inhabitants. With regards to the fighting spirit and helplessness-hopelessness subscale, there were differences between individual group results, but they did not show any statistical significance.

Education and income of the study patients diagnosed with prostate cancer differentiated results obtained in the interrelated subscales of anxious preoccupation and helplessness-hopelessness. In both cases the Mini-MAC scores decreased along with increase in income and education. With regards to anxious preoccupation, the mean score in respondents of vocational education was 15.38 and in those with secondary and higher education – 13.16 and 13.10, respectively. As part of the helplessness-hopelessness subscale, mean scores of respondents with elementary and vocational education were 13.89 and 12.66, respectively; while of patients with secondary and higher education only 10.77 and 10.36, respectively. Respondents with a net income-per-household-member PLN 300 to 600 scored a mean of 15.82 in the first subscale; respondents with an income of PLN 601 to 900 – 14.67; respondents in an income group of PLN 901 to 1200 – 13.47; and finally, respondents with highest income – merely 13.07. The mean scores in the helplessness-hopelessness subscale ranged from 13.12, in lowest income patients, thought 11.89, 10.98 to 10.16 in top income patients, respectively.

In the case of patients with breast cancer as the primary site, the absence or presence of chemotherapy in the past 12 months divided the respondents into two groups (Table 7). Respondents who were administered chemotherapy obtained higher results

in the anxious preoccupation and helplessness-hopelessness subscales, and lower scores in the fighting spirit and positive re-evaluation categories. It indicated that it is more difficult for patients undergoing chemotherapy to cope with their disease. Nevertheless, the observed differences were significant only with regards to the anxious preoccupation subscale: 17.25 in patients undergoing/after chemotherapy and 15.43 in patients not treated with chemotherapy.

We reported a reversed correlation in lung cancer patients. Respondents who underwent chemotherapy treatment in the past 12 months had higher scores in positive strategies. The reported differences were statistically significant only in the case of the fighting spirit subscale, namely 23.05 at 20.99.

In colorectal cancer patients we observed yet another distribution of test results. Respondents who were administered chemotherapy treatment obtained higher results in all subscales of the Mini-MAC; however, only in the negative strategies category the results were significant in terms of statistics. In the anxious preoccupation subscale, the group which was treated had a mean score of 16.93 and the group not treated, 14.90. In the helplessness-hopelessness subscale, the recorded mean values were 13.12 and 11.57, respectively.

Table 7. **The results of the Mini-MAC vs. chemotherapy presence/absence in various groups of respondents**

Group	Are you undergoing chemotherapy?		Anxious preoccupation	Fighting spirit	Helplessness-hopelessness	Positive re-evaluation
Breast	Yes	Mean	17.25	23.00	12.76	21.67
		N	51	51	51	51
		SD	4.94	3.66	4.85	3.22
	No	Mean	15.43	23.58	11.58	22.18
		N	142	142	142	142
		SD	4.91	3.03	3.77	3.04
	Total	Mean	15.91	23.43	11.89	22.05
		N	193	193	193	193
		SD	4.97	3.21	4.10	3.09
Lung	Yes	Mean	16.74	23.05	13.08	21.97
		N	109	109	108	109
		SD	5.30	3.86	4.24	3.31
	No	Mean	17.16	20.99	13.93	20.93
		N	134	134	134	134
		SD	5.40	5.17	4.64	4.62
	Total	Mean	16.98	21.91	13.55	21.40
		N	243	243	242	243
		SD	5.35	4.73	4.48	4.11

table continued on the next page

Colon/rectum	Yes	Mean	16.93	23.57	13.12	22.40
		N	126	127	126	128
		SD	4.72	3.67	4.32	2.94
	No	Mean	14.90	23.25	11.57	22.21
		N	111	111	111	110
		SD	4.39	3.61	4.05	2.70
	Total	Mean	15.98	23.42	12.39	22.31
		N	237	238	237	238
		SD	4.67	3.64	4.26	2.83
Prostate	Yes	Mean	13.95	22.62	11.49	22.82
		N	39	39	39	39
		SD	5.12	3.80	4.72	2.95
	No	Mean	14.02	22.43	11.37	21.88
		N	189	189	188	189
		SD	4.81	3.37	4.13	2.98
	Total	Mean	14.01	22.46	11.39	22.04
		N	228	228	227	228
		SD	4.85	3.44	4.23	2.99

SD – Standard deviation

Discussion

In the face of cancer, patients generally adopt two extreme attitudes to the new situation: an active one, aiming at fighting for one's life and health, and a passive one, typically leading to giving up and resigning oneself to one's fate [22, 23]. In our research, patients suffering from colorectal and breast cancer were characterized by the most active attitude. Studies demonstrate that an active style of coping with cancer positively affects the quality of life, extends survival, and reduces the symptoms of disease [17, 19, 20]. Constructive strategies of coping with disease involve both fighting one's disease and seeking emotional and instrumental support [24]. There are two subscales of the Mini-MAC that correspond to an active adjustment to disease. Positive re-evaluation, in which the highest result in our study was achieved by patients suffering from colorectal cancer, allows patients to see their disease as just a phase in life, which may as well be motivation for implementing changes in one's life. The aspect of the fighting spirit, in which the highest mean results in our study were achieved by breast cancer patients, involves focusing on a particular problem, which in this case is cancer, and undertaking cooperation with doctors in order to treat it.

In our study, we observed the highest scores in the anxious preoccupation and helplessness-hopelessness subscales in the following groups of patients: lung, colorectal, breast, and prostate cancer. Patients suffering from lung cancer (mean 13.55 for helplessness-hopelessness and 16.98 for anxiety preoccupation) present passive adjustment to the disease, typically characterized by resignation, loss of hope, treating the disease as an unfair punishment, but may equally be expressed by denial, suppression of emotions, or beliefs in external control (faith in healing thanks to doctors or superior force) [4]. Studies carried out by Juczyński indicated an analogous distribution of results in the helplessness-hopelessness subscale, but also higher scores in the anxious preoccupation subscale in prostate cancer patients, and lower scores for breast cancer respondents (22.10 and 20.10, respectively). In terms of the fighting spirit, in our study the highest mean results were noted for breast cancer (23.45) and colorectal cancer (23.42), whereas Juczyński indicated prostate cancer patients (23.90) [21].

Malicka et al. point at the effect of physical activity on one's attitude to disease. On the basis of an analysis of 36 women post breast cancer treatment, they concluded that patients who participated in at least 5 different types of activities per week displayed higher results in the fighting spirit category. Sightseeing tours and dancing, which were of particular importance in this regard, also played a significant role in improving the Mini-MAC test scores in the positive re-evaluation subscale and the constructive style [25]. In terms of our research, patients with breast cancer reached the mean of 22.05 in the positive re-evaluation – the only group lower than the mean of patients suffering from colorectal cancer. However, patients with colorectal and lung cancer adopted the constructive style of struggling with the disease to a greater extent. Comparable dependencies were further confirmed by other researchers, amongst others, by Lueboonthavatchai [1] and Pinto et al. [26]. What is more, it was evidenced that active adjustment to disease had a positive effect on treatment outcomes [27].

The studies by Juczyński conducted on women diagnosed with breast cancer reported the mean score in constructive coping with disease at 40.3, and in destructive one – 35.8 (in our study these values were 44.48 and 27.8, respectively). In the case of prostate cancer, these values were 46.2 and 36.6, respectively (in our study – 44.5 and 25.4, respectively). In the case of patients with colorectal cancer, the mean score for the constructive style of coping was 36.56 and 39.94 for the destructive one [21] (in our study – 45.73 and 28.37).

Michałowska-Wieczorek drew attention to the differences in coping with disease between men and women [28]. In the analysis of a group of 150 patients diagnosed with the mammary gland, ovary, lung and prostate cancer, she proved that women more often than men opted for the "fighting spirit strategy", according to which disease is perceived as a challenge. On the other hand, men much more frequently revealed anxious preoccupation, expressed by the feeling of anxiety and fear, when faced with a given situation. In addition, males significantly more often displayed helplessness and hopelessness in disease. The only strategy that did not differ between the groups was positive re-evaluation. In our research no statistically significant differences were noted between groups of females and males with any types of cancer.

Kozak highlighted a relation between the level of disease acceptance and the adopted strategy of mental adjustment [29]. The findings of studies conducted in gastric, reproductive organ, pancreas, colorectal and prostate cancer patients denote that the higher the level of disease acceptance, the more important the fighting spirit strategy and the lower degree of anxious preoccupation and helplessness-hopelessness. Moreover, Kozak showed that anxious preoccupation and helplessness-hopelessness decreased with patient age. When analyzing mental adjustment to disease in view of the primary site, the study by Kozak reported highest results for the fighting spirit in the case of reproductive organ cancer patients (23.95) and the lowest – in pancreas and prostate cancer patients (15.63 and 15.68, respectively). And inversely, the helplessness and hopelessness strategy was most prevalent in prostate cancer (24.32) and pancreas cancer (21.22) patients, and the least popular in reproductive organ cancer patients (mean 13.70). Even though, in our study the patients suffering from prostate cancer achieved a slightly lower result in terms of the fighting spirit (22.46) than those suffering from breast cancer (23.43) or colorectal cancer (23.42), in the subscales of helplessness-hopelessness the mean for that group of patients was the lowest (11.39).

Numerous studies denote that adopted strategies of coping with disease differ with regards to time from diagnosis and treatment stage [17, 30, 31]. In a study by Szczepańska-Gieracha et al. with participation of breast or reproductive organ cancer patients treated on an outpatient basis, the mean fighting spirit score was 24.1. The mean recorded for post-treatment patients was 11.1. Similarly, the positive re-evaluation strategy results tended to decrease with the extension of time from diagnosis. The helplessness and anxious preoccupation strategies remained stable regardless of time after diagnosis [32]. Similar results were obtained in our research. The study demonstrated that in the case of patients suffering from breast cancer, undergoing treatment (chemotherapy) decreased the average results of patients in the fighting spirit subscale and positive re-evaluation. However it influenced the increase in results in both aspects: anxious preoccupation and helplessness-hopelessness.

Many studies show that some patients tend to note positive sides of disease, i.e. beneficial changes that the disease introduces into their lives [7, 8]. Such strategies of perceiving disease are strongly correlated with the fighting spirit strategy and inversely correlated with the lack of hope and helplessness, which as a consequence positively affects adjustment to disease [9].

An adopted style of adjustment to disease significantly affects the quality of life of patients. Johansson et al. stated that patients who displayed a high level of helplessness and anxious preoccupation assessed their quality of life much worse [33]. Thome and Halberg [34] arrived at similar conclusions. Finally, the studies by Laarhoven showed that the fighting spirit strategy had a positive effect on the quality of life of the patients [35].

Conclusions

1. The primary site affects patients' attitudes towards mental adjustment to disease.
2. Socioeconomic factors differentiate colorectal carcinoma patients in the most pronounced way. Attitudes towards mental adjustment to disease are affected by one's professional status, place of residence and net income-per-household-member.
3. There is a correlation between mental adjustment to disease and chemotherapy in the last year; though, results differ with respect to the primary site.
4. Given the diversity of factors contributing to selecting a particular strategy of adjustment to cancer, we may plan specific psychotherapeutic actions for a specific group of patients, which could supplement standard therapy.
5. Constructive strategies of adjustment to disease should constitute an important element of education of psychologists, doctors, and patients themselves.
6. The findings reported by the authors of this study may become an incentive to extend the area of research and include patients suffering from other chronic diseases.

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Address: Urszula Religioni
Public Health Department
Medical University of Warsaw
02-079 Warszawa, Banacha Street 1a