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EDICIONES COMPLUTENSE

Hopelessness and Fighting Spirit Relation with Illness Perception in Breast Cancer Patients

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Abstract. Objective: Breast cancer is related to numerous psychological challenges, so the way of coping with the illness and its consequences may influence the outcome of treatment. Also, while confronting the diagnosis individuals will use their own illness perception in order to evaluate the possibility of healing and that can affect different areas of their functioning. The aim was to examine the degree to which women with breast cancer perceived their illness as threatening, as well as to examine potential predictive power of illness perception on strategies of coping with illness (hopelessness and fighting spirit). Method: 102 patients (M_{age} = 58.64, SD_{age} = 10.143), who were hospitalized at the Center for Oncology and Radiology, for treatment of previously diagnosed breast cancer (M_{months} = 19.07, SD_{months} = 23.49), were included in the study. The instruments included sociodemographic questionnaire, medical records, Brief Illness Perception Questionnaire and the Mini-Mental Adjustment to Cancer scale. Results: Patients declared to use fighting spirit more than hopeless style of coping the illness. Model that included Illness perception, Metastasis and Treatment length predicted 16% of Fighting Spirit variance. Model that included Illness perception and Age predicted 39% of Hopelessness variance. Conclusion: Illness perception can predict the tendency to resort to hopelessness and there is a correlation between certain sociodemographic and clinical characteristics with hopelessness and fighting spirit coping styles.

Key words: Breast cancer, fighting spirit, hopelessness, illness perception.

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[es] Relación de la Desesperanza y el Espíritu de Lucha con la Percepción de Enfermedad en Pacientes con Cáncer de Mama

Resumen. Objetivo: El cáncer de mama se asocia a una serie de cambios psicológicos, el modo de afrontamiento la enfermedad y sus consecuencias puede influir en el resultado del tratamiento. Además, al afrontar el diagnóstico las personas utilizarán su propia percepción de la enfermedad para evaluar la posibilidad de curación, lo que puede afectar diferentes aspectos de su funcionamiento. El objetivo del presente estudio es examinar el nivel en el que las mujeres con cáncer de mama perciben su enfermedad como amenaza, además de examinar el posible valor predictivo de la percepción de la enfermedad en las estrategias del afrontamiento con la enfermedad (desesperanza y espíritu de lucha). Método: 102 pacientes (M_{edad} = 58,64; SD_{edad}= 10,143) incluídos en la investigación, todos internados en el Centros de Oncología y Radioradio, para tratamiento (M_{months} = 19,07, SD_{months} = 23,49) del cáncer mamario previamente diagnosticado. Los instrumentos incluyeron un cuestionario sociográfico, registros médicos, El Cuestionario Breve de Percepción de la Enfermedad y La Escala-Mini de Ajuste Mental al Cáncer. Resultados: Las pacientes afirmaron que utilizan más el espíritu combativo que la desesperación para afrontar la enfermedad. El modelo que incluía la percepción de la enfermedad, metástasis y duración del tratamiento pronosticó 16% de la divergencia del Espíritu Combativo. El modelo que incluía la percepción de la enfermedad y la edad pronosticó 39% de la divergencia de la desesperación. Conclusión: La percepción de la enfermedad puede pronosticar la tendencia hacia la desesperación; además, existe la relación entre ciertas características sociodemográficas y clínicas y ciertos mecanismos de afrontar la enfermedad, como son la desesperación o el espíritu combativo.
Palabras clave: Cáncer de mama, espíritu de lucha, desesperanza, percepción de enfermedad.

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1. Introduction

Breast cancer is considered as the illness of the present and it is one of the most frequent causes of morbidity and death in women[1]. The data show that around 2.3 million new cases of female breast cancer were recorded during 2020, i.e., it was estimated that one in every four women diagnosed with a form of malignancy had breast cancer, so this form of illness surpassed lung cancer as the most commonly diagnosed cancer[2]. According to the data from Cancer Registry, there were 2,966 women with a diagnosed breast cancer in Central Serbia during 2015, while 1,215 women passed away due to breast cancer consequences[3].

Forms of Coping with Illness

Breast cancer is an illness that disturbs person's physical health, as well as her femininity and sexuality, causing psychological, social, and professional problems. It is also followed by periods of recovery and deterioration and it causes short-term and long-term adjustment disorders[4]. Studies showed that even four years after diagnosis, around 12% of women report signs of mental health problems[5].

Breast cancer is associated with numerous psychological challenges a woman faces when she attempts to overcome the consequences of the illness[6]. A number of studies showed that more active forms of coping with the illness, such as attempts to

reduce, eliminate or control stressful triggers, were associated with better mental and physical condition of a person than attempts to avoid, ignore, or pull themselves out of them[7]. Therefore, a division to adaptive and maladaptive mechanisms of coping strategies can often be found in the literature.

One of the most commonly-used measures of coping with stressors is the Brief COPE scale[8], that assesses a range of adaptive and maladaptive coping strategies, e.g., self-distraction, active coping, denial, venting, positive reframing, acceptance, self-blame, etc. However, when we consider measurements of coping with cancer, the questionnaire that stands out is the Mini-MAC that assesses fighting spirit, fatalism, anxious preoccupation, cognitive avoidance and helplessness-hopelessness[9]. Since the Mini-MAC is used as a tool for monitoring the mental state of patients suffering from cancer, in this study we decided to primarily focus on dimensions examined with this instrument.

Most studies show that one of adaptive mechanisms in patients is perseverance and it is stated that women who show a fighting spirit when confronting the illness have a better quality of life after being diagnosed[10]. Significant correlations were also observed between sense of coherence, active coping, acceptance, positive reframing, and health-related quality of life in women with breast cancer[11]. The maladaptive strategy of coping with illness, which occurs frequently with breast cancer patients, is the strategy of hopelessness/ helplessness and is related to the tendency of patients to take an entirely negative, pessimistic stand on the illness[12]. This strategy of coping can be described best with a theory of learned helplessness[13], which shows that when people feel they have no control over their situation, they tend to give up rather than fight for control. Moreover, studies found results that poorer pre-morbid mental health increases vulnerability to poor mental health after breast cancer diagnosis[14]. It has been shown that people who already had disturbed mental health frequently resorted to hopeless strategy[15].

These two strategies of coping with illness, fighting spirit and hopelessness, are distinctly connected with the levels of experienced stress in patients with breast cancer[16]. In fact, it has been noted that hopelessness was significantly negatively correlated with physical and emotional well-being, and it was positively correlated with additional concerns regarding the illness. On the other hand, higher degrees of fighting spirit were associated with higher levels of physical and emotional well-being[17], and predicted overall survival before and during chemotherapy[15]. Also, research showed that persons diagnosed with cancer who are expressing higher levels of fighting spirit and lower degrees of hopelessness, even two years after being diagnosed, had better life quality[10]. The mentioned research found that a cluster with higher scores on the fighting spirit and lower scores on the helpless-hopeless and anxious preoccupation subscales predicts better quality of life. Therefore, authors concluded that fighting spirit is an indicator of adaptive coping style in contrast to hopelessness and anxious preoccupation which are shown to be maladaptive coping strategies.

However, other studies that examined relationships between depression (or depressive coping style and hopelessness) and disease outcomes in different types of cancer patients, found mixed results; some of them found evidence of a relationship, other found no relationship and some found inverse relationships between psychological adjustment and disease progression, which suggests the need for more studies in this field[18].

Illness Perception

The model proposed by Leventhal and associates[19] suggests that individuals construct cognitive and emotional perceptions of threats that will guide and regulate their behaviour towards illness. One of these is perception of *illness symptoms*. The next dimension implies *time course* of the illness, which can be perceived as acute, chronic, or cyclic. Illness perception also depends on observed *causes of illness*, as well as potential *consequences* of it. The degree to which a person can *control* the illness, as well as the degree to which the treatment can control it, also shapes its perception. Moreover, the degree to which a person understands the illness, as well as the degree to which a person is aware of her emotional reactions to it, also influence illness perception. It is shown that illness perceptions among breast cancer patients appear to be fairly resistant to change without direct intervention, especially over the early course of the illness treatment[20]. Theoretically, illness perceptions act as a framework for the coping strategies that individuals select which is shown in the sample of patients with different types of cancer with no metastases [4]. It is important to underline that the female patients recruited for our study underwent some surgical interventions during treatment, which may have greatly influenced their illness perception. In addition, this study included a wider range of sociodemographic variables, along with illness features and its treatment, serving as control variables. Thus, this fact as well as the scarcity of research into this issue, provides a significant contribution of the current study.

Therefore, the aim of the study was to examine:

– The degree to which women with breast cancer perceived their illness as threatening,
– potential correlation and predictive power of illness perception on applying forms of coping with illness (hopelessness and fighting spirit),
– Whether control variables (sociodemographic variables, illness and treatment features) have a role of mediator in a model that assumes correlation between illness perception and forms of coping with illness.

2. Methods

Sample Characteristics and Study Design

One hundred-and-two patients, who were hospitalized at the Center for Oncology and Radiology, for treatment (radical or breast-conserving surgeries) of previously diagnosed breast cancer were included in the study.

The Clinical Centre Ethics Committee approved the study (Nº 01/20-659) which was conducted in accordance with the 1989 Helsinki Declaration. The study sample was recruited from the patients screened at the Center for Oncology and Radiology, Clinical Centre of Kragujevac, for the severity of the cancer and necessity for the surgical treatment, from February 2021 to June 2021. One hundred-twenty-six were considered initially eligible for the study. After careful consideration, based on the inclusion criteria, 102 were invited to participate in the study, during their inpatient treatment. Study included all adult female patients hospitalized with a

diagnose of breast cancer, that don't have any other form of malignant disease or psychiatric disorder. In the study group, the breast cancer diagnosis was confirmed based on International Classification of Diseases - 10 (ICD-10) criteria for breast cancer (C50 – *Neoplasma malignum mammae*) by a board-certified oncologist [21]. Other psychiatric and somatic comorbidities were also evaluated based on the ICD-10 criteria using personal history and chart review and only the patients with no previous history of other malignances or psychiatric disorders were invited to participate in the study. Metastases existence was assessed in all patients using imaging procedures (MRI). All patients provided written informed consent to participate in study were further included.

The characteristics of the study group are shown in Table 1.

Table 1. Sociodemographic and clinical characteristics of the study group

Sociodemographic characteristics	
Age	Range 35-79, *M* = 58.64, *SD* = 10.143
Marital status	
Married	63 (61.8%)
Divorced	15 (14.7%)
Single	6 (5.9%)
Widow	18 (17.6%)
Education level	
Elementary school	19 (18.6%)
High school	52 (51.0%)
College/University	31 (30.4%)
Employment status	
Employed	21 (20.6%)
Unemployed	24 (23.5%)
Retired	57 (55.9%)
Number of children	
No children	12 (11.8%)
One child	22 (21.6%)
Two or more children	68 (66.7%)
Number of relatives with a diagnosed malignancy	
No relatives with a diagnosed malignancy	63 (61.8%)
One diagnosed relative	25 (24.5%)
Two or more diagnosed family members	14 (13.7%)
Illness and treatment characteristics	
Treatment length in months	Range 1-120, *M*= 19.07, *SD*= 23.49
Type of surgical intervention	
Breast-conserving surgery	59 (57.8%)
Mastectomy	43 (42.2%)
Type of applied treatment	
Chemotherapy + radiotherapy + hormonal therapy	26 (25.5%)
Chemotherapy + immunotherapy	22 (21.6%)

Chemotherapy + radiotherapy + immunotherapy	18 (17.6%)
Other	36 (35.3%)
Cancer stage	
First	51 (50.0%)
Second	41 (40.2%)
Third	6 (5.9%)
Fourth	4 (3.9%)
Metastases existence	
One or more metastases	19 (18.6%)
No metastases	83 (81.4%)

Instruments

Upon entering the study, all patients were contacted by a trained research assistant who provided them with semi-structured questionnaire coupled with self-reporting psychometric instruments. The questionnaire contained the questions regarding sociodemographic characteristics (age, marital status, education level, employment status, number of children, number of family members diagnosed with any form of malignancy). All clinical data concerning the course of illness and treatment (the length of treatment expressed in months, the type of applied surgical intervention, the type of postoperative treatment, the stage in which the illness was diagnosed and metastases existence) were obtained by a blinded research assistant, who reviewed charts and complete medical records of each enrolled patient. The self-reporting instruments included Brief Illness Perception Questionnaire – BIPQ [22] and the Mini-Mental Adjustment to Cancer -Mini-MAC[9].

Brief Illness Perception Questionnaire – BIPQ[22] was previously translated and validated on a sample of Serbian patients[23]. This scale assesses cognitive and emotional representations of illness, as well as the degree of patients' understanding the illness. The questionnaire consists of nine items, eight questions require an answer on a 0-10 response scale, while one question is an open-type and it requires the examinees to evaluate the most probable causes of their illness. Items refer to evaluating the consequences, length, and the degrees of control the examinees have over their illness, the evaluation of treatment success, emotional consequences and the points to which they understand the illness (e.g., *How much control do you feel you have over your illness*? *How well do you feel you understand your illness*?). Score range is from 0 to 80, and a higher score indicates more negative perception of the illness or perception of the illness as more threatening [22]. Previous results point to a satisfying average reliability of the complete questionnaire, and the questionnaire's reliability in our research was α=.82.

The Mini-Mental Adjustment to Cancer - Mini-MAC[9] questionnaire was translated to Serbian language by *forward-backward* translation method; it was translated from English to Serbian, and then people who speak English fluently translated it back to English. Face validity of the scale was checked by two psychiatrists. The questionnaire consists of 29 items which examine cognitive and behavioral responses to breast cancer diagnosis on a four-degree scale of Likert's type. The original factor structure showed the presence of five mechanisms of coping with the illness: fighting spirit, fatalism, anxious preoccupation, cognitive avoidance and helplessness-hopelessness. Later studies proposed different structures, ranging from just two to original five

dimensions[23]. In these studies, the Helplessness/Hopelessness subscale was shown to be very stable and robust, while the Fighting Spirit subscale was found to be the best representative of the adaptive copying style dimension. Our research focused on Fighting Spirit and Helplessness/Hopelessness scales since it is shown that fighting spirit is linked to low levels of psychopathology while helplessness-hopelessness is consistently related to higher levels[9]. Subscale of Fighting spirit refers to the tendency to confront and actively face the illness, and it consists of four items (e.g., *I am determined to beat this illness*). This subscale showed reliability of α=.76[9], while in our research it has the reliability of α=.58. Helpless-Hopeless subscale means acquiring a pessimistic approach to the illness and it consists of eight items (e.g., *I feel like giving up*, or *I feel there is nothing I can do to help myself.*). This subscale showed high reliability of α=.87[9], which was confirmed in our study (α=.86).

Statistical Analyses

The data were analyzed using SPSS for Windows version 20.0. The data are described using standard descriptive statistics (i.e., frequencies and percentages, mean value with standard deviation for numeric variables, and Cronbach α coefficients for internal consistency of instruments). For continuous variables, t-test of independence or one-way analysis of variance (ANOVA) was used. To further estimate the association between measured variables, the Spearman's or Pearson's correlation coefficients, as appropriate, were calculated. Multiple regression, and structural equation modeling (SEM) were used to test the prediction of Fighting spirit and Hopelessness score values. For the purposes of model fitting, the following coefficients were used: comparative fit index (CFI) > .95, goodness-of-fit (GFI) > .95, a root mean-square error of approximation (RMSEA) and standard root mean-square residual (SRMR). Cutoff levels for RMSEA and SRMR were < .06 for "good fit" [24]. The results were regarded as statistically significant if p-values were ≤.05.

3. Results

Descriptive statistics of the main variables are shown in Table 2.

Table 2. Descriptive statistics of the main variables

	M	SD	Min/Max	Skewness	Kurtosis	Shapiro-Wilk
Illness Perception	27.62	16.96	0/71	.30	-.62	.98
Fighting Spirit	12.91	2.78	5/16	-.98	.34	.89**
Helpless-Hopeless	12.69	5.41	8/31	1.17	.68	.83**

Note: ** p < .01

As can be seen in Table 2, the results on the scale of Illness perception (IP) did not significantly deviate from normal distribution, while on the scale of Fighting spirit (FS) they were grouped towards higher values, and on the scale of Helpless-Hopeless (HL) towards lower values. Participants declared to use fighting spirit more

than hopeless style of coping the illness. The greatest number of examinees (82.4%) singled out the stress as the most frequent cause of their illness.

Correlations

High positive correlation between IP and HL was noted ($r = .60$, $p < .01$), i.e., patients who showed concern about the illness also resorted to hopelessness as a reaction strategy to the illness (Table 3). Correlation between IP and FS was negative and weak ($r = -.21$, $p < .05$), and between HL and FS also negative but moderate ($r = -.35$, $p < .01$).

Table 3. Intercorrelations between main variables

		Hopeless	Illness Perception	Age	Education level	Treatment length	Cancer stage
Fighting Spirit	r	-.352**	-.205*	-.164	.170	-.327**	-.111
	p	.000	.039	.099	.088	.001	.268
Hopelessness	r		.599**	.200*	-.199*	.166	.033
	p		.000	.044	.045	.096	.738
Illness Perception	r	.599**		.022	-.148	.092	-.071
	p	.000		.830	.139	.357	.479
Age	r	.200*	.022		-.302**	.078	.172
	p	.044	.830		.002	.433	.084
Education level	r	-.199*	-.148	-.302**		.110	.061
	p	.045	.139	.002		.271	.544
Treatment length	r	.166	.092	.078	.110		.289**
	p	.096	.357	.433	.271		.003

Note: ** $p < .01$, * $p < .05$

When it comes to the correlation between HL and different subscales in the illness perception questionnaire, several statistically significant correlations were obtained, the strongest being the correlation between hopelessness and concern about the illness, the perception of emotional illness consequences and illness influence on the lives of patients (respectively: $r = .52$, $p < .01$; $r = .48$, $p < .01$; $r = .46$, $p < .01$).

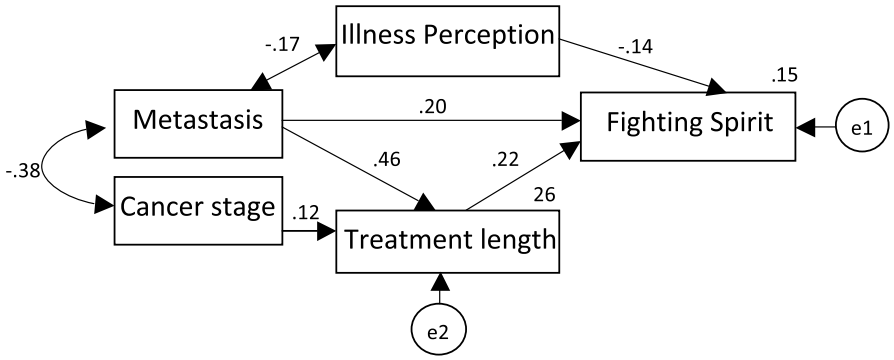
When control variables were considered (Table 3), treatment length correlated negatively with FS. Also, there was a statistically significant low positive correlation between HL and patients' age, and negative correlation with education level. It was also confirmed that FS is expressed in patients without metastases more than in patients with metastases ($t_{(100)}=-3.30$, $p<.01$). Cancer stage, family history, surgical intervention form and other clinical and sociodemographic variables weren't significant for explaining main variables values.

Prediction of Fighting Spirit

Further, based on theoretical assumptions, we tested an initial structural model according to which IP was hypothesized to predict FS directly. From other tested variables (sociodemographic, clinical and treatment data), according to the obtained

significant correlations with the predictor variable (Illness perception) or criterion variable (Fighting Spirit), we included only length of treatment (Table 3). Moreover, since FS was expressed more in patients without metastases, this variable also was included in the model. Finally, with length of treatment being in moderate correlation with cancer stage, this variable was included in the initial model (Figure 1).

Figure 1. Initial model of FS prediction



When we excluded Cancer stage from the model, considering it poorly predicted Treatment length, we got our final model (Figure 2), which predicted 16% of FS variance, and had somewhat better model fit indices than the initial one (Table 4).

Figure 2. Final model of FS prediction

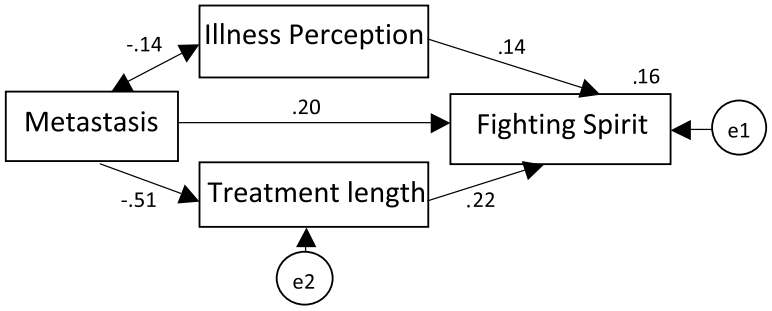


Table 4. Model fit indices for Fighting spirit

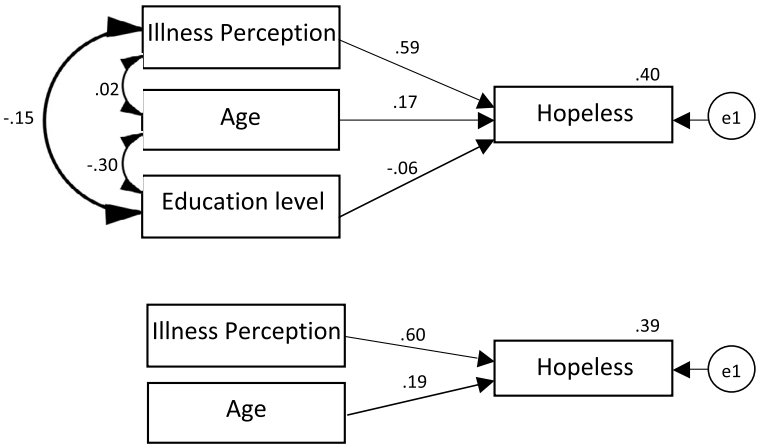
	χ^2	*df*	*p*	GFI	CFI	RMSEA	PCLOSE
initial model	4.036	3	.40	.985	.959	.009	.905
final model	2.079	2	.35	.990	.998	.001	.828

Note: GFI = goodness of fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standard root mean-square residual

Prediction of Hopelessness

Based on theoretical assumptions, we tested an initial structural model according to which IP was hypothesized to predict HL directly. From other tested variables (sociodemographic, clinical and treatment data), according to the obtained significant correlations with the predictor variable (Illness perception) or criterion variable (Hopelessness), we included Age and Education level (Table 3) in the model (Figure 3). Further analysis didn't show significant improvement of model characteristics, except that Education level didn't significantly predict Hopelessness, so we concluded that more precise model was one without this variable (39% of variance, $\chi^2(3) = 50.576$, $p<.01$, GFI .999, CFI .999, RMSEA .04, PCLOSE .00).

Figure 3. Models of HL prediction



4. Discussion

The results of our research are obtained by analyzing the data on a sample of women diagnosed with breast cancer (after the treatment), who showed moderate levels of concern about the illness and used mostly fighting spirit style rather than hopeless form of coping the illness. The data also explained that women who had negative perception of their illness showed higher degree of hopelessness.

Previously conducted studies showed that the degree to which a person used specific mechanisms for coping the illness depended on illness perception [(4)], which our research confirmed. More precisely, it has been shown that 39% of hopelessness variance could be explained by illness perception and age, i.e., negative perception largely led to the tendency of hopelessness as a style of coping the illness. This result is in accordance with the results of previous studies which showed that hopelessness level in cancer patients was lower if they didn't perceive their illness in negative context [(25)]. One recent study has also proved that negative perception of the illness and its consequences in breast cancer patients significantly predicted helplessness tendency

as a coping mechanism[26]. Since the same study showed that depression degree was also a significant predictor of helplessness, the necessity to evaluate psychological condition of patients before and during treatment is additionally emphasized.

Moreover, it is shown that as the patient gets older, their tendency to feel hopeless also grows, which can be associated with the consequences of aging. Finally, recently conducted research showed that hopelessness level was higher in women with breast cancer with lower education level[27], which was also confirmed in our research. This result can probably be explained by the tendency of more educated women to seek intensely for information about their illness.

The results of our study showed that hopelessness was mostly connected to the concern about the illness, as well as the perception of emotional consequences and the influence of the illness to the lives of the patients. Similar data were obtained in one research on a sample of women without surgical intervention [26], but the correlation between mentioned variables was weaker in that study, so we can assume that surgical intervention is an additional stressful trigger for ill women and it influences their illness perception.

Furthermore, it is shown that fighting spirit as a form of coping the illness is more present in women whose illness doesn't last long. Although the data in the literature so far about the correlation between illness length and coping mechanisms are frequently inconsistent, there are results which show that fighting spirit is associated with positive effects only in women whose breast cancer has been recently diagnosed [7]. Women whose treatment lasts long are more likely to feel discouraged about the illness and thus are less fighting the illness. Besides that, it's important to give the particular significance to metastasis existence as a factor that significantly predicts level of fighting spirit and also indirectly, through the impact that has on treatment length, influences the fighting spirit of ill women. Considering the fact that women with metastases are more likely to feel symptoms of their illness and undergo additional, often unpleasant medical interventions, it's no surprise that they are less likely to keep fighting spirit.

Study Limitations

The research was conducted using self-evaluation questionnaires which limits the objectivity of the obtained data. Thus, it is desirable to conduct research where illness perception, as well as coping strategies, will be checked based on the data obtained by a medical team or patients' significant other. Also, since it's cross-sectional study, the data about predictive values are statistical and do not necessarily confirm the real cause-effect relation. Finally, some of our results are retrospective in nature (e.g., that 82.4% of our patients declared stress as the most frequent cause of their illness), and retrospective studies are seen as problematic because the diagnosis of cancer may affect patients' recall of earlier events due to the search for personal meaning [18].

5. Conclusion

It is shown that illness perception can predict the tendency to resort to hopelessness as a mechanism of coping the illness in women diagnosed with breast cancer, as well as that there is a correlation between certain sociodemographic and clinical

characteristics with hopelessness and fighting spirit coping styles in the same sample. Previous studies have shown that illness perception in breast cancer patients is stable over time [20]. Since our study determined a significant influence of negative illness perception on hopelessness in ill women, it is necessary to point out the importance of clear and continuous communication of a medical team and a psychologist with patients in order to acquire adequate insight into the illness, its consequences and treatment, and to prevent or minimize hopeless feeling of breast cancer patients. It is necessary to form multidisciplinary team of experts who, after patients are diagnosed, will strive to provide ill women and their families not only with clear information about the illness, but support and understanding over the whole treatment course. In that case it could be expected from ill women to show less concern about their condition and thus protect their mental health. This is a useful data for medical team and significant others, so they may be able to help ill women to develop minor level of anxiety towards the illness and therefore upgrade life quality, since earlier studies showed that hopelessness is correlated to poorer quality of life[10].

6. References

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