

Resilience and Defense Mechanisms in Patients with Cancer Outpatient Chemotherapy

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Resiliência e Mecanismos de Defesa em Pacientes com Câncer em Quimioterapia Ambulatorial

Resiliencia y Mecanismos de Defensa en Pacientes con Cáncer en Quimioterapia Ambulatorial

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ABSTRACT

Introduction: The ability to cope with adverse situations, defined as resilience, helps patients to overcome difficulties in their treatment. However, there are still few studies assessing resilience in cancer patients undergoing outpatient chemotherapy. **Objective:** To assess resilience in cancer patients undergoing outpatient chemotherapy and to verify its correlation with defense mechanisms, as well as with symptoms of depression and anxiety. **Method:** Observational, correlational and prospective study with patients of both sexes, diagnosed with cancer, over 18 years old, literate and beginning treatment with outpatient chemotherapy. The following instruments were applied on the first day of chemotherapy treatment and then again after 30 to 45 days: Resilience Scale, Defense Style Questionnaire (DSQ-40), Beck's Depression Inventory and Beck's Anxiety Inventory. **Results:** A total of 55 participants were included in the study, 32 (58%) of which were female, with an average age and standard deviation (SD) of 54.1 (SD=12.2) years. The most frequent diagnoses were colorectal cancer, 15 (27%) and breast cancer, 12 (22%). There was a significant negative correlation between symptoms of depression or anxiety and resilience levels both in the first ($p<0.001$) and in the second evaluation ($p<0.05$). Mature defense mechanisms (mood and rationalization) showed a significant positive correlation with resilience, while immature ones (performance and split) showed a negative correlation. **Conclusion:** The results confirmed that a greater capacity for resilience correlates with the use of adaptive defense mechanisms and with lower levels of depressive symptoms and anxiety in patients while receiving outpatient chemotherapy.

Key words: resilience, psychological; neoplasms; drug therapy; defense mechanisms.

RESUMO

Introdução: A capacidade de enfrentamento de situações adversas, que é definida como resiliência, auxilia o paciente a superar as dificuldades do tratamento. Entretanto, ainda são poucos os estudos que avaliam a resiliência em pacientes com câncer que realizam quimioterapia ambulatorial. **Objetivo:** Avaliar a resiliência de pacientes com câncer em tratamento quimioterápico ambulatorial e verificar a correlação com os mecanismos de defesa, sintomas depressivos e de ansiedade. **Método:** Estudo observacional, de correlação e prospectivo, com pacientes com diagnóstico de câncer, de ambos os sexos, maiores de 18 anos, alfabetizados e em início de tratamento com quimioterapia ambulatorial. Os seguintes instrumentos foram aplicados no primeiro dia de tratamento quimioterápico e após 30 a 45 dias: Escala de Resiliência, *Defense Style Questionnaire* (DSQ-40), Inventário de Depressão de Beck e Inventário de Ansiedade de Beck. **Resultados:** Um total de 55 participantes foi incluído, sendo 32 (58%) do sexo feminino, com média e desvio-padrão (DP) de idade de 54,1 (DP=12,2) anos. Os diagnósticos mais frequentes foram câncer colorretal, 15 (27%) e câncer de mama, 12 (22%). Observou-se correlação negativa significativa entre sintomas depressivos e de ansiedade com os níveis de resiliência tanto na primeira ($p<0,001$) como na segunda avaliação ($p<0,05$). Os mecanismos de defesa maduros (humor e racionalização) apresentaram correlação positiva significativa e os imaturos (atuação e cisão) demonstraram correlação negativa. **Conclusão:** Os resultados confirmaram que a maior capacidade de resiliência se correlaciona com o uso de mecanismos de defesa adaptativos e com menores níveis de sintomas depressivos e de ansiedade em pacientes durante a quimioterapia ambulatorial.

Palavras-chave: resiliência psicológica; neoplasias; tratamento farmacológico; mecanismos de defesa.

RESUMEN

Introducción: La capacidad de afrontar situaciones adversas, que se define como resiliencia, ayuda al paciente a superar las dificultades del tratamiento. Sin embargo, todavía hay pocos estudios que evalúen la resiliencia en pacientes con cáncer sometidos a quimioterapia ambulatoria. **Objetivo:** Evaluar la resiliencia de los pacientes oncológicos sometidos a quimioterapia ambulatoria y verificar la correlación con los mecanismos de defensa y con síntomas depresivos o de ansiedad. **Método:** Estudio observacional, correlacional y prospectivo con pacientes de ambos sexos, diagnosticados con cáncer, mayores de 18 años, alfabetizados e iniciando tratamiento con quimioterapia ambulatoria. Los siguientes instrumentos se aplicaron el primer día de tratamiento de quimioterapia y otra vez después de 30 a 45 días: Escala de resiliencia, Cuestionario de estilo de defensa (DSQ-40), Inventario de depresión de Beck e Inventario de ansiedad de Beck. **Resultados:** Se incluyeron 55 participantes en la investigación, 32 (58%) de los cuales eran mujeres, con una edad promedio y desviación estándar (DE) de 54,1 (DE=12,2) años. Los diagnósticos más frecuentes fueron cáncer colorrectal, 15 (27%) y cáncer de mama, 12 (22%). Se encontró una correlación negativa significativa entre síntomas depresivos o de ansiedad y los niveles de resiliencia tanto en la primera ($p<0,001$) como en la segunda evaluación ($p<0,05$). Los mecanismos de defensa maduros (estado de ánimo y racionalización) mostraron una correlación positiva significativa y los inmaduros (rendimiento y división) mostraron una correlación negativa. **Conclusión:** Los resultados confirmaron que una mayor capacidad de resiliencia se correlaciona con el uso de mecanismos de defensa adaptativos y con menores niveles de síntomas depresivos y ansiedad en pacientes durante la quimioterapia ambulatoria.

Palabras clave: resiliencia psicológica; neoplasias; quimioterapia; mecanismos de defensa.

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INTRODUCTION

A public health problem, cancer is one of the non-communicable diseases that currently impact the profile of sickening of the Brazilian population¹. Chemotherapy is a systemic treatment modality with single or combined chemical agents administered at intervals according to the therapeutic protocols^{1,2}. Simultaneously with the potential cure of some tumors, innumerable adverse side effects occur; it implies in frequent hospital visits with rupture of the patient's regular environment, changing habits, self-realization, personal care and interruption of daily activities³.

The oncologic patient may have depression and anxiety symptoms after the diagnosis, association with death and treatment side effects⁴. It is challenging for healthcare professionals to understand and identify the patient's feelings in face of the complex health-disease process.

Anxiety is an emotional response to an unknown stressor, an external pressure on the individual, possibly pathological if interfering in life functioning or reasonable emotional well-being⁴. The patient with depressive symptoms fails to feel pleasure associated with sleeping disorder, weight and feeding profile change, fatigue, cognitive impairment, worthless feeling, guilt and suicidal ideation⁵.

Indeed, the patient has its life changed soon after the diagnostic of cancer, creating conflicts and uncertainties. It has to pursue strategies to cope with physical and psychosocial adversities related to the pathology and treatment⁶.

Resilience is the ability to withstand adverse situations and problems. In a study with patients diagnosed with cancer, high resilience promotes adaptation and flexibility to the sickening process and better adherence to the treatment⁷.

Defense mechanisms are mental processes that can also be utilized while coping with cancer and recruited by the ego to challenge the biological or psychological threats and contribute for the adjustment, adaptation and balance of the personality⁸. Every individual choses unconsciously a restricted number of defensive mechanisms it utilizes to cope with internal or external conflicts. They play a protective and adaptive function⁹.

Mature defense mechanisms are considered adaptive as they are able to maximize the gratification and ensure the conscious recognition of feelings, ideas and consequences. The use of these mechanisms indicates a more favorable adaptation to manage stressor events. In neurotic mechanisms, ideas, feelings, remembrances seen as threatening and unconscious are kept. Immature defenses are narcissistic and involve distortions of the

image of the other, keeping the stressors, impulses ideas and affections out of the conscience^{8,9}.

This study is justified due to the necessity of improving the knowledge of emotional reactions and coping in patients with cancer in chemotherapy treatment; possibly, it will qualify the care provided and evaluate the patients' resilience in outpatient chemotherapy treatment and calculate the correlation among the level of resilience and defense mechanisms and depressive and anxiety symptoms.

METHOD

Observational, correlation and prospective study conducted at the chemotherapy outpatient of "*Hospital de Clínicas de Porto Alegre (HCPA)*" between May and August 2018. Patients of both sexes, older than 18 years of age, literate and beginning outpatient-based chemotherapy treatment were enrolled. Patients with diagnosis of mental disorder or cognitive deficit were excluded. During the nurse consultation² in a secluded room, prior to the beginning of the treatment, the patients were invited to join the study. The Institutional Review Board of HCPA approved the study (CAAE: 84903718.8.0000.5327); the patients signed the Informed Consent Form (ICF).

The own patient responded to a data collection form with sociodemographic data (sex, age, years of education). Clinical information (diagnosis and chemotherapy treatment) were collected from the online chart. The following instruments were applied in the first day of the chemotherapy treatment and after 30 to 45 days: Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Scale of Resilience and the Defense Style Questionnaire (DSQ-40).

BDI and BAI were utilized to identify depressive and anxiety symptoms, respectively. The 21-items instruments validated to Portuguese are self-reported, addressing symptoms and attitudes which occurred in the last week. The intensity of the symptoms evaluated for each item ranges from 0 to 3, the higher the BDI and BAI scores, more intense the symptoms are.

The Resilience Scale is a self-report instrument validated to Portuguese and utilized to measure the levels of psychosocial adaptation to life events¹¹. It consists of 25 Likert-response scores ranging from 1 (fully disagree) to 7 (fully agree). The scores vary from 25 to 175 points and high values indicate elevated resilience.

DSQ-40 is a self-reported instrument validated to Portuguese⁹. It evaluates 20 defense mechanisms divided in three factors: mature, neurotic and immature. The scores of each mechanism are calculated by the mean of two items available for each defense and factors are

calculated by the mean of the defense scores belonging to each factor. Each item is evaluated by a Likert-scale ranging from 1 (fully disagree) to 9 (fully agree). The higher the score, more defense mechanisms utilized.

Sample size was calculated through WinPepi v.11.44, considering level of significance of 5%, power of 90%, standard deviation before and after of 2.8 and correlation of 0.7. The sample consisted of 55 participants, considering a difference of 6 points in the Resilience Score.

Statistical Package for the Social Sciences (SPSS), version 18.0 was utilized to analyze the data as mean and standard deviation for continuous variables with normal distribution and median (interquartile interval) for asymmetrical variables with level of significance of $\alpha=0.05$. The categorical variables were presented as absolute frequency and percentage. The changes of intensity of the symptoms during chemotherapy were evaluated with Wilcoxon or *t* test.

The correlations between resilience and other variables were tested with Spearman's correlation and findings were relevant for $r>0.300$. The ranges of the effect size of the correlation were: $r=0.100$ to <0.300 : weak; $r\geq 0.300$ to <0.500 : moderate; $r\geq 0.500$ to 1.000 : strong¹².

RESULTS

The characteristics of the sample of all the 55 participants enrolled are presented in Table 1. There was loss in the second evaluation because of poor treatment adherence. 32 were females (58%), mean of 54.1 years of age and $SD=12.2$, ranging from 27 to 73 years. Most frequent diagnosis were colorectal cancer in 15 patients (27%) and breast cancer in 12 (22%). The chemotherapy protocols most utilized were doxorubicin and cyclophosphamide (AC) and FOLFOX in 19 patients (35%).

The comparison between the two evaluations with the instruments applied are shown in Table 2, and no significant modification of depressive symptoms and anxiety were detected similar to resilience and defense mechanisms.

Moderate to great negative correlation was found among resilience levels and depression symptoms ($r=0.544$) and anxiety ($r=-0.402$) both in the first ($p<0.001$) and in the second evaluation ($p<0.05$). As more depressive symptoms and anxiety the patients feel, lower is their resilience (Table 3).

The second evaluation of defense mechanisms revealed significant positive moderate correlation among mature mechanisms and resilience. As high are the mature humor mechanisms ($r=0.535$), rationalization ($r=0.482$) and suppression ($r=0.317$), higher was resilience. No

Table 1. Sociodemographic and clinic characteristics of the sample (n=55)

Characteristics	Frequency*
Sociodemographic	
Sex*	
Female	32 (58)
Age (years)**	54.1 (12.2)
Education**	8.5 (3.8)
Marital Status*	
Married	24 (44)
Divorced	15 (27)
Single	12 (22)
Widow/Widower	4 (7)
Clinic*	
Diagnosis#	
Colorectal cancer	15 (27)
Breast cancer	12 (22)
Lung cancer	4 (7)
Esophageal cancer	4 (7)
Uterine Cancer	3 (6)
Pancreatic cancer	3 (6)
Gastric cancer	2 (4)
Urogenital cancer	2 (4)
Non-Hodgkin lymphoma	2 (4)
Chemotherapy Protocol##	
AC - Doxorubicin and cyclophosphamide	10 (18)
FOLFOX	9 (16)
Paclitaxel and carboplatin	7 (13)
Xelox	5 (9)
Cisplatin	4 (7)
Cisplatin and gemcitabine	3 (6)
Etoposide and cisplatin	3 (6)
Folfirinox	2 (4)
Cisplatin and fluorouracil	2 (4)

(* Categorical variables presented in absolute frequency and percentage (%).

(**) Continuous variables in mean and standard-deviation.

(#) Frequency of 1 (2%) case of: prostate, liver, neuroendocrine, testicle, ovary, Hodgkin lymphoma and diffuse lymphoma.

(##) Frequency of 1 (2%) of the protocols of: doxorubicin, ABVD, paclitaxel, docetaxel, etoposide and carboplatin, cisplatin and vinorelbine, docetaxel and cyclophosphamide, capox, R-CHOP, docetaxel and trastuzumab.

correlation was found with neurotic mechanisms. With immature mechanisms, moderate negative correlation was detected with acting out ($r=-0.322$) and from positive moderate with dissociation ($r=0.446$) and splitting ($r=0.307$).

DISCUSSION

Resilience is the ability to withstand adversity that can be used to cope with tough situations^{6,8}, and it is affected by several factors as depression and mental processes.

Table 2. Comparison between the first and second evaluation associated with depressive symptoms and anxiety, resilience and defense mechanisms

Variables	Evaluation 1 (n=55)	Evaluation 2 (n=54)	p
Symptoms*			
Depressive	10 (5-16)	9 (5.7-15)	0.924
Anxiety	5 (2-12)	5.5 (2-10)	0.882
Scale of resilience**			
Resilience	136.3 (28.4)	133 (24.9)	0.280
Defense mechanisms**			
Mature	6.1 (1.4)	5.8 (1.5)	0.059
Neurotic	5.0 (1.3)	4.8 (1.2)	0.255
Immature	3.8 (1.9)	3.8 (1.1)	0.705

(*) Continuous variables presented in median and percentile (P25-P75) analyzed with Wilcoxon.

(**) Continuous variables presented in mean and standard deviation analyzed with t test for dependent sample.

Correlation between the symptoms and resilience was found in the current study, as high the scores of depressive symptoms and anxiety, lower was the level of resilience.

The results are similar to former findings for patients with cancer where depressive symptoms and anxiety were detected¹³. These symptoms impact how coping and adherence to cancer treatment will develop¹⁴.

The results of a study with women with breast cancer in initial stage confirmed the significant negative correlation between depression and resilience¹⁵. Patients with high resilience had better quality of life as concluded in another study evaluating the quality of life and resilience¹⁶. The authors emphasized that the findings may help to develop psychosocial interventions to strengthen resilience in patients with cancer^{15,16}.

The defense mechanisms of humor, rationalization and suppression (mature), dissociation and splitting (immature) held positive significant correlation with resilience. The correlation with acting out (immature)

Table 3. Correlation between resilience and depressive symptoms and anxiety and defense mechanisms in the first and second evaluation

Variables	Resilience			
	Evaluation 1 (n=55)		Evaluation 2 (n=54)	
	r*	p	r*	p
Symptoms				
Depressive	-0.523	<0.001	-0.544	<0.001
Anxiety	-0.467	<0.001	-0.402	0.003
Defense mechanisms				
Mature	0.384	0.004	0.475	0.002
Sublimation	0.149	0.278	0.113	0.417
Humor	0.368	0.006	0.535	<0.001
Anticipation	0.202	0.140	0.236	0.086
Rationalization	0.322	0.017	0.482	<0.001
Suppression	0.197	0.150	0.317	0.019
Neurotic	0.068	0.620	0.052	0.710
Undoing	-0.166	0.227	-0.085	0.542
Altruism	-0.073	0.598	-0.075	0.589
Idealization	0.111	0.418	0.136	0.328
Reaction formation	0.104	0.418	0.120	0.386
Immature	-0.063	0.646	-0.027	0.849
Projection	-0.235	0.084	-0.117	0.398
Isolation	0.024	0.865	-0.003	0.982
Passive aggression	-0.363	0.006	-0.179	0.194
Acting out	-0.183	0.180	-0.322	0.017
Splitting	0.100	0.469	0.307	0.024
Autistic fantasy	-0.241	0.076	-0.281	0.039
Devaluation	0.062	0.653	-0.178	0.197
Denial	0.170	0.215	0.147	0.287
Dissociation	0.333	0.013	0.446	0.001
Displacement	-0.178	0.195	-0.057	0.684
Somatization	-0.234	0.086	-0.120	0.349

(*) Spearman's correlation.

was the opposite. Defense mechanisms can be used in the coping process, the mature are utilized in stressful situations. The immature mechanisms can be used for distortion of stressful situations^{8,9}. The patient is able to express its feelings, justify the situations considered unacceptable (for instance, cancer) and recognize its present status in its own time, minimizing the impact through defense mechanisms as humor and rationalization. The most adaptive defense mechanisms associate with elevated levels of resilience, which helps to cope with the stressful situation as the chemotherapy treatment⁷. According to a systematic review⁸ about defense mechanisms in oncologic patients, rationalization, projection and denial were the mechanisms often identified in the studies reviewed. The authors concluded that understanding the defensive profile of oncologic patients may help to improve the care offered to them⁸.

Actually, the oncologic treatment causes important changes in the patients' lives; further to the disease itself, the effects of the mechanisms or procedures, activities of daily living are impacted. However, a study about resilience in oncologic patients concluded that the treatment itself contributed for the development of the resilience, encouraging the utilization of the individual's protective factors³.

For being an observational study of correlation, the limitation is that it was not possible to determine the causality among the variables. Due to the short time between the evaluations, modifications of the symptoms of anxiety and depression were unable to detect. Nevertheless, it is relevant because of the paucity of studies on this theme in outpatient chemotherapy.

CONCLUSION

Cancer is a current and prevalent disease which at every year affects the world population, as the studies concluded. Chemotherapy is one of the treatment modalities with undesired effects for the individuals who suffer intense changes in their social, professional and emotional lives, which compel them to seek ways to cope with the disease and stress.

The confirmation that a correlation between depressive and anxiety symptoms and coping ability exists is the contribution of the present study that evaluated the emotional aspects through validated instruments. Resilience is critical for the treatment and according to the results, the patient's emotions interfere with the levels of resilience. It was possible to conclude too that the defense mechanisms utilized during treatment correlated with how the stressor situation was coped with, in case, the chemotherapy.

Whereas resilience can change, the multiprofessional team should be aware of the psychosocial aspects of the patient during the therapeutic sessions to determine the necessity of specific follow-up of mental health. With this, full and quality care can be offered efficiently. Follow-up studies to evaluate the resilience and associated factors are necessary to understand the mental processes of oncologic patients.

CONTRIBUTIONS

All the authors contributed substantially for the study conception and/or design, acquisition, analysis and/or interpretation of the data, wording and critical review. All the authors approved the final version to be published.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

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