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Gender in psycho-oncology: focus on resilience and affective disorders among patients affected by lymphoma

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Abstract

Objective: Evaluating gender differences in resilience, depression, and anxiety levels in patients suffering from lymphoma and exploring possible association between constructs.

Method: The study enrolled a consecutive series of 110 patients suffering from lymphoma compared with 140 controls matched for age, gender, and education. Several validated instruments were used: to measure resilience, anxious and depressive symptoms. Comparisons between groups were performed using a one-way Analysis of Variance (ANOVA) and Pearson Correlation's was used to investigate the associations between constructs.

Results: Significant gender differences between female and male patients with lymphoma were found for all the explored dimensions. Psychological constructs seemed to be more compromised in the patients' group than in the control group and specifically more in women than in men. This finding underlines higher sensitiveness for women affected by lymphoma. Resilience (i.e., SOC and SOM scores) and level of depression and anxiety are more strongly associated among female patients than among male patients.

Conclusion: The main finding of the present study is that for patients suffering from lymphoma, resilience and psychopathology have a different pathway based on gender. These gender differences can be considered to prompt appropriate tailored psychological treatments for depressive and anxious symptoms in onco- hematology. Women with lymphomas displayed lower mean in resilience score (SOC and SOM), and greater level of depression and anxiety than women in the control group. The comparisons between men with lymphomas and men in the control group point out significant differences only for the level of depression and anxiety which was higher in male patients than in male controls. On the other hand, women with lymphoma displayed poorer level of Resilience (SOC and SOM) and higher level of depression and anxiety than men affected by Lymphoma.

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1. Introduction

Depression and affective disorders are seen as a common complication of advanced cancer (Draeger et al., 2018; Johnson, 2018; Potash & Breitbart, 2002), but actually depressive, anxious, and related debilitating symptoms are under-diagnosed and under-treated among cancer patients (Irving & Lloyd-Williams, 2010; Nakamura et al., 2020), resulting in a significant negative impact on quality of life and disease outcome (Berard, 2000; Choi & Ryu, 2018; Vorn et al., 2019). A specific semiology for depressive and affective disorders in the oncologic field might be more relevant with practical clinical implications (Reich, 2010).

Gender differences can influence health and reactions in presence of a stressful event like a cancer diagnosis (Friborg et al., 2003). Knowledge about psychological processes and effects of gender differences among cancer patients is lacking (Hinz et al., 2019; Koyama et al., 2016; Northouse et al., 1998). Some studies have showed that cancer's adjustment is related to gender (Allen, 1994; Baider et al., 1989; Schumacher et al., 1993), whereas other researchers have found no differences according to gender (Oberst & James, 1985). The Goldzweig's study (2009) concluded that gender differences imply that men (healthy or sick) tend to receive more support than what they give to their wives and that men do not use the support they receive as effectively as their wives. Thus, although men report higher levels of support from their spouses, they also report higher levels of psychological distress (Goldzweig et al., 2009). Indeed, other studies (Koyama et al., 2016; Northouse et al., 2000) stated that probably this difference can be explained by the greater sensitivity of women for physical symptoms and by the stronger inclination to communicate them. Differences in resilience level can also be explained by diverse mechanisms, like coping, distress, and social support. Women reported more distress, more role problems, and less marital satisfaction than men, regardless of whether they were colon cancer patient or spouse (Northouse et al., 2000). In another study the adjustment of 39 couples in which one partner had colon cancer was assessed and the main findings were that the adjustment of male patients was superior to that of female patients (Baider et al., 1989). Specifically, in onco-hematological field gender differences have different interpretation, female patients seem to report more symptoms and higher overall distress due to illness compared with male patients in Pandey's study (Pandey et al., 2006). After this study Cole et al. (2011) observed that women were more likely to have an history of depression than men. More recently Bergerot et al. (2015) findings suggest that gender differences were related to problem-related distress but not to grade of neoplasm and especially female patients reported more distress, anxiety, and depression than male patients. Although psychopathology seems to be explored in oncology and in onco-

hematology literature, scant attention was given to psychological protective factors like resilience. In this paper we consider resilience, sense of mastery and sense of coherence as resources able to protect against the development or onset of psychopathology. Those resources are reported to be a significant force behind healthy adjustment to life stresses, rather than the absence of risk factors (Friborg et al., 2003). Resilience is the ability to resist or recover from adversity, the ability to "rebound or spring-back" (Oxford English dictionary, 1971). Not specifically in oncological field, resilience was positively correlated with bold signal strength in the right thalamus as well as in the inferior and middle frontal gyri (Brodmann area 47) and it was established as a significant predictor of PTSD symptom severity and mediated the influence of childhood trauma on posttraumatic adjustment (Daniels et al., 2012). Some researchers have investigated resilience as a process incorporating protective factors (Rutter, 1987) and a review has investigated different roles of resilience as a trait and as a process in children, adolescent and adult subjects, in healthy people and in cancer patients, with discordant conclusions (Jacelon, 1997). To our knowledge, no previous study has purposely investigated gender differences in resilience and psychopathology in onco-hematology.

1.1 The current study

The aims of the present study are: (i) to evaluate gender differences in level of Resilience, depression and anxiety levels among patients affected by lymphoma. (ii) to explore the possible association between resilience, depression and anxiety levels among patients suffering from lymphoma. For the first aim, women affected by lymphoma were compared to controls women; men suffering from lymphoma were compared with controls men; female patients were compared with male patients; female controls were compared with male controls. For the second aim, correlational analyses were performed to explore the association between Resilience (i.e., Sense of coherence and Sense of mastery) with depression and anxiety among different sub-groups: (i) women affected by lymphoma, (ii) women in the control group, (iii) men suffering from lymphoma, and (iv) men in the control group.

2. Methods

2.1 Participants

The study enrolled a consecutive series of 110 patients suffering from lymphomas admitted to the hospital ward (Section of Hematology and Bone Marrow Transplantation Unit, Careggi University Hospital, Florence, Italy), between March 2nd, 2012 and March 30th, 2013. The sample of women and men have not previously experienced the disease (cancer). We haven't

controlled the severity of the disease because Lymphoma shows a lot of subtypes. Gender differences can be related to different treatments with respect to different characteristics. Also comparing grade of severity of different subtypes in different gender can be dispersive. All patients have different age and different characteristics so treatments are considered in a specific way case by case.

Exclusion criteria were age < 18 and > 75 years, intellectual disability, and not fluent Italian. Of the 110 patients contacted, 7 (6.4%) refused to participate and therefore, 103 (59 women and 44 men) patients were included in the study.

A group of 140 people drawn from the general population living in the same catchment area and matched for age, gender and education made up the controls. These subjects were randomly recruited from the lists of the Italian National Health System (99.7% of the citizens are included in the list of the NHS).

2.1 Ethical Considerations

The study was designed and conducted according to the Standards for Psychological Research of the Italian Association of Psychology (www.aip.org). The approval of the local Ethics Committee was obtained on July, the 25th, 2011.

The study was approved by the local ethical committee and a written informed consent was obtained from all the participants prior to the enrolment.

2.2 Measures

At enrollment, socio-demographic variables and a complete medical history were collected, including oncological diagnosis, age of onset, stage of cancer, current and past treatments (i.e., chemotherapy, radiotherapy, and surgical operation). A number of validated instruments were used: the Sense of Coherence scale (SOC, Antonovsky & Sagy, 1987) and the Sense of Mastery scale (SOM, Pearlin & Schooler,1978) were used to measure resilience, the Hospital Anxiety Depression Scale (HADS, Zigmond & Snaith, 1983), and the Beck Depression Inventory II (BDI II, Beck, et al., 1996) to measure anxious and depressive symptoms. The SOC scale measures the sense of coherence, a global orientation to view the world and the individual environment as comprehensive, manageable, and meaningful (Antonovsky, 1979). It contains three items (e.g., "I have feelings I'm not sure I can keep under control") on a 7-point Likert scale (from 1 = very seldom or never, to 7 = very often). Higher scores indicate a higher sense of coherence. The Italian version of the SOC scale (Bonacchi et al., 2012; Di Fabio, 2015) showed a unidimensional structure, good internal consistency and concurrent validity. The SOM

scale assesses the global belief in one's ability to control things and to mitigate adverse aversive events. The scale contains seven items (e.g., "What happens to me in the future mostly depends on me") which are rated on a 7-point Likert scale with 1 meaning "Strongly agree" and 7 meaning "Strongly disagree". Higher scores indicate a higher level of self-mastery. The Italian version of SOM showed a one-factor structure and good internal consistency (Bonacchi et al., 2012). The HADS is a 14-item self-report questionnaire on a 4-point Likert scale. The questionnaire includes depression and anxiety subscales (seven items for each). The total score ranges from 0 to 42 for all the 14 items, and each subscale (depression and anxiety) is scored from 0 to 21. The HADS has shown good psychometric properties as a measure to assess depressive and anxiety symptoms in Italian samples (Costantini et al., 1999). The Beck Depression Inventory II (BDI II, Beck, et al., 1996) quantitatively assesses the depressive symptoms perceived by the patient. It consists of 21 items rated on a four-point Likert-type scale ranging from 0 to 3. It explores the affective, cognitive, motivational, vegetative, and psychomotor components of depression. Each item comprises a list of four statements arranged by the increasing severity of a symptom of depression; the higher the score, the higher the severity of depressive symptoms. Excellent psychometric properties of the BDI-II on Italian individuals were found (Sica et al., 2007).

2.3 Statistics

The Statistical Package for the Social Sciences for Windows SPSS (IBM, 2011) version 20.0 was used for data analysis. Comparisons across groups were performed using a one-way Analysis of Variance (ANOVA). Pearson Correlation's coefficients were used to investigate the associations between the study variables.

3. Results

As patients and control subjects were matched for sex, age and educational level, no significant differences between patients and controls were found for gender (42.7 % vs 49.3 % of females), age (55.2 ±15.6 vs 53.7±14.9 years old), and educational level (10.5±4.1 vs 10.6±4.0 years of educations).

3.1 Comparison between patients and controls divided by gender for the levels of resilience, anxiety, and depression

The comparisons between female and male patients with lymphoma revealed significant gender differences in the explored dimensions whereas the comparisons between controls women and

controls men did not show any significant differences (**Table 1).** Women with lymphomas displayed lower mean in resilience score (SOC and SOM), and greater level of depression and anxiety than women in the control group. The comparisons between men with lymphomas and men in the control group for the above-mentioned variables are summarized in Table 1.

Table 1. Gender differences between the study variables

ONCOLOGICAL GROUP [GENDER DIFFERENCES]					***HEALTHY GROUP [GENDER* DIFFERENCES*]***				**FEMALE *CONTROLS VS FEMALE PATIENTS***				***MALE CONTROLS VS MALE PATIENTS***			
	WOMEN (N=44)	**MEN N=59**	***F***	***p***	***WOMEN* (N=69) M(DS)**	***MEN* (N=71) M(DS)**	**F**		**WOMEN CONTROLS N=69**	**WOMEN PATIENTS N=44**	**F**	***p***	**MEN CONTROLS N=71 M(DS)**	**MEN PATIENTS N=59 M(DS)**	**F**	***p***
BDI	10.23(8.79)	5,31(6,07)	11,291	,001	1.64(1.55)	1.53(2.98)	-	ns	3.80 (1.87)	7.77 (4.14)	20.51	.000	3.89(1.83)	6.24(3.06)	17.32	000
HOSPITAL H.AD.S.	16.05(6.21)	13,17(4,96)	6,827	,010	7.24(2.26)	7.19(3.01)	-	ns	1.64 (1.55)	10.23 (8.79)	23.31	.000	1.53(2.98)	5.31(6.07)	12.10	001
ANXIETY H.A.D.S.	7.77(4.14)	6,24(3,06)	4,680	,033	3.80(1.87)	3.89(1.83)	-	ns	3.32 (1.49)	8.32 (3.30)	51.02	.000	3.53(1.92)	6.93(2.96)	37.73	.000
DEPRESSION H.A.D.S.	8.32(3.30)	6,93(2,96)	4,993	,028	3.32(1.49)	3.53(1.92)	-	ns	7.24 (2.26)	16.05 (6.20)	46.51	.000	7.19(3.01)	13.17(4.96)	42.57	000
SOC -THE UNDERSTANDING	1.23 (.68)	1.58 (.62)	7.359	.008	1.55 (.50)	1.61(.62)	-	ns	1.55 (.50)	1.23 (.67)	8.48	.004	1.61(.62)	1.58(.62)	.07	789
SOC FEASIBILITY	1.14 (.76)	1.29 (.61)	1.240	-	1.16 (.56)	1.25 (.63)	-	ns	1.16 (.5)	1.14 (.76)	.034	.854	1.25(.63)	1.29(.61)	.10	.753
SOC – MEANINGFULNESS	1.25 (.65)	1.58 (.56)	7.393	.008	1.30 (.65)	1.41 (.62)	-	ns	1.30 (.6)	1.25 (.65)	.188	.665	1.41(.62)	1.58(.56)	2.55	.113
SOC TOTAL	3.61 (1.48)	4.44 (1.19)	9.839	.002	4.01 (1.18)	4.27 (1.32)	-	ns	4.60 (1.00)	3.61 (1.51)	8.49	.005	4.81(.98)	4.49(1.12)	1.93	168
SOM TOTAL	28.52 (8.29)	35.02 (7.85)	16.441	.000	32.63(8.10)	3.27 (8.46)	-	ns	32.63 (8.10)	28.52 (8.29)	6.62	.011	34.27(8.46)	35.02(7.85)	.26	.607

SOM-UNCONTROLLABLENESS OF EVENTS	3.77 (1.54)	4.95 (1.48)	15.413	.000	5.05 (1.57)	5.16 (1.48)	-	ns	5.05 (1.57)	3.77 (1.54)	17.60	.000	5.16(1.48)	4.95(1.48)	.64	425
SOM- SELF-RESOLUTION	4.34 (1.64)	5.15 (1.41)	7.243	.008	5.08 (1.69)	5.41 (1.44)	-	ns	5.08 (1.68)	4.34 (1.64)	5.09	.026	5.41(1.44)	5.15(1.41)	1.07	301
SOM - INELUCTABILITY OF DESTINY.	4.34 (1.66)	5.25 (1.37)	9.351	.003	4.83 (1.65)	5.06 (1.59)	-	ns	4.83 (1.64)	4.34 (1.66)	2.31	.131	5.06(1.59)	5.25(1.37)	.55	.456
SOM - HELPLESSNESS	3.95 (1.73)	4.97 (1.49)	10.102	.002	4.66 (1.71)	4.80 (1.64)	-	ns	4.66 (1.76)	3.95 (1.72)	4.29	.041	4.80(1.64)	4.97(1.49)	.35	.552
SOM -HARD-PUSHED	3.36 (1.63)	4.51 (1.75)	11.468	.001	3.88 (1.55)	4.13 (1.94)	-	ns	3.88 (1.55)	3.36 (1.63)	2.77	.099	4.13(1.94)	4.51(1.75)	1.34	.248
SOM -SELF IMPUTATION	3.95 (1.31)	4.92 (1.20)	14.825	.000	4.57 (1.93)	4.73 (1.81)	-	ns	4.57 (1.93)	3.95 (1.31)	3.40	.068	4.73(1.82)	4.92(1.20)	.45	.502
SOM -SENSE INABILITY	4.80 (1.11)	5.27 (1.08)	4.768	.031	4.57 (1.82)	5.06 (1.62)	-	ns	4.57 (1.82)	4.80 (1.11)	.54	.463	5.06(1.62)	5.27(1.08)	.74	.389

Significant differences appeared only for the level of depression and anxiety which was higher in male patients than in male controls. On the other hand, women with lymphoma displayed poorer level of Resilience (SOC and SOM) and higher level of depression and anxiety than men affected by Lymphoma.

3.2 Correlations between resilience, anxiety, and depression

The correlations between Sense of Coherence, Sense of Mastery, anxiety, and depression among female and male patients are reported in Table 2.

Table 2. Correlations between Sense of coherence, Sense of Mastery, depression and anxiety among women and men with Lymphoma

	BECK DEPRESSION INVENTORY I GLOBAL		HOSPITAL ANXIETY DEPRESSION SCALE GLOBAL		ANXIETY (HOSPITAL ANXIETY DEPRESSION SCALE)		DEPRESSION (HOSPITAL ANXIETY DEPRESSION SCALE)	
	Women	Men	Women	Men	Women	Men	Women	Men
	N=44	N=59	N=44	N=59	N=44	N=59	N=44	N=59
SOC -THE UNDERSTANDING-	--	--	--	--	--	--	-,314**	--
SOC -THE FEASIBILITY-	-,447**	--	-,466**	--	--	--	-,542**	--
SOC – MEANINGFULNESS-	-,526**	-,486**	-,532**	-,418**	-,444**	-,450**	-,427**	-,276*
SOC TOTAL	-,467**	-,329*	-,545**	--	-,308**	--	-,621**	--
SOM -SENSE OF UNCONTROLLABLENESS OF EVENTS-	-,357**	-,357**	-,479**	-,326**	-,421**	--	-,338**	-,339**
SOM- SENSE OF SELF -RESOLUTION OF PROBLEMS	-,349**	-,343**	-,462**	-,302*	-,447**	--	--	-,306*
SOM - INELUCTABILITY OF DESTINY -	-,395**	-,431**	-,463**	-,328*	-,429**	--	-,305*	-,335*
SOM -HELPLESSNESS TO PROBLEMS-	-,395**	-,316*	-,486**	--	-,386**	--	-,389**	--
SOM -HARD-PUSHED-	--	--	-,305*	--	--	--	--	-,330*
SOM -SELF-IMPUTATION OF EVENTS-	-,300*	--	-,331**	--	-,336**	--	--	--
SOM -SENSE OF INABILITY-	-,526**	-,347**	-,615**	-,353**	-,566**	--	-,425**	-,328*
SOM TOTAL	-,439**	-,364**	-,553**	-,328*	-,500**	--	-,387**	-,341*

* p<.05; ** p<.001

Resilience (i.e., SOC and SOM scores) and level of depression and anxiety are more strongly associated among female patients than among male patients.

Correlations among women in the control group (data not shown) revealed that comparison between [Soc–Meaningfulness-, Som-Hard-Pushed-, Som-Self-Imputation of Events- respectively associated with Hospital Anxiety Depression Scale Global, Beck Depression Inventory II Global, Hospital Anxiety Depression Sub-Scale] are significant p< 0.005 and

negative associated r >-.30 just. Higher value on resilience score (SOC and SOM scores) are associated with lower score on affective disorders.

Correlations among men in the control group (data not shown) revealed only one association with $p<.05$ and $r>.30$, that is the correlation between Soc-Meaningfulness and Hospital Anxiety Depression Scale Global.

4. Discussion

The main finding of the present study is that for patients suffering from lymphoma, resilience and psychopathology have a different pathway based on gender as before discussed by other authors (Friborg et al., 2003). Our results confirm psychological resilience to be a relevant process for patients affected by lymphoma (Jacelon, 1997). In our study resilience in patients suffering from lymphoma seems to be compromised in women more than in men and seems to be more damaged in women with lymphoma than controls women. This data suggests that reaction to a diagnosis of a chronic disease can be influenced by a psychological protective factor like resilience, and that resilience is associated with psychopathology in different ways between genders. These results support similar research (Bergerot et al., 2015; Cole et al., 2011; Pandey et al., 2006). Indeed, in our comparison hematologic sub-groups have lower level of psychological protective factor and greater level of affective disorder than control gender sub-group. This trend is in line with Daniel's study of 2021. Also, our results suggest that resilience can be considered as a factor associated with psychopathology among lymphoma patients. This finding evidence gender differences as a relevant topic in psycho-oncology, so that women seem to be more sensitive than men. The association between resilience and psychopathology in lymphoma sub-group may suggest a gender vulnerability which predisposes the individual to develop some cluster of psychological needs. To our knowledge scant attention was given in the recent literature to deepen the topic of "gender vulnerability for lymphoma patients". Correlations are statistically significant just for women sub-group, reconfirming that the association between resilience and psychopathology can be a marker of women-gender and less important in men subgroup. So, we confirm results of Keller's study of 1999. In our opinion this result must be considered in oncological standard care in order to improve the model of care.

The effects of resilience on depression and anxiety might be mediated by several different pathways. Psycho-social factor, either environmental (i.e., 'impact' and 'stress adaptive capacity',

coping skills and social support), could potentially modulate the relationship in cancer field (Peled et al., 2008; Surtees et al., 2010).

Some limitations of the present study must be acknowledged. The health state can influence the personal evaluation of the perceived resilience. A larger sample and a more detailed investigation are therefore necessary to confirm the association between resilience and psychopathology. However, gender differences in psycho-oncology should be considered in the assessment context and in the clinic intervention process. The evaluation of the distinctive aspects contributing the psychological well-being of male and female cancer patients could improve the provision of adequate support adapted to gender-specific requirements (Keller & Henrich, 1999). To our knowledge, this is the first study that specifically investigated the possible relationship between resilience, psychopathology and gender differences and offers additional information regarding the predisposing factor of psychopathology for lymphoma patients. The gender differences can be considered to be central in order to design appropriate "tailored" psychological interventions when evaluating the possible risk factors for psychopathology among patients affected by lymphoma.

Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any potential conflict of interest.

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