

Hostility in cancer patients as an under-explored facet of distress

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ABSTRACT

OBJECTIVE. In the present study we aimed to assess hostility and to examine its association with formal psychiatric diagnosis, coping, cancer worries and quality of life in cancer patients.

METHODS. The World Health Organization (WHO) Composite International Diagnostic Interview (CIDI) to make an ICD-10 (International Classification of Disease) psychiatric diagnosis was applied to 516 cancer outpatients. The patients also completed the Brief Symptom Inventory-53 to assess hostility (BSI-HOS), and the Mini-Mental Adjustment to cancer scale (Mini-MAC). A subset of patients also completed the Cancer Worries Inventory (CWI), the Openness Scale, and the Quality of Life Index.

RESULTS. By analyzing the distribution of the responses 25% of the patients had moderate and 11% high levels of hostility, with about 20% being BSI-HOS “cases”. Hostility was higher in patients with a formal ICD-10 psychiatric diagnosis (mainly major depression, other depressive disorders, anxiety disorders) than patients without ICD-10 diagnosis. However, about 25% of ICD-10-non cases also had moderate-to-high hostility levels. Hostility was associated with Mini-MAC hopelessness and anxious preoccupation, poorer quality of life, worries (mainly problems in interpersonal relationships) and inability to openly discuss these problems within the family.

CONCLUSIONS. Hostility and its components should be considered as dimensions to be more carefully explored in screening for distress in cancer clinical settings for its implications in negatively impacting on quality of life, coping and relationships with the family, and, possibly the health care system.

Key Words: Hostility, emotional distress, screening, cancer, psycho-oncology

Running title: Hostility and cancer

1. BACKGROUND

Patients with cancer often display significant emotional distress symptoms, which may culminate in the onset of full-fledged psychological disorders, that have an estimated prevalence of 35-40% over the disease trajectory.¹ The majority of available studies has focused on depression, anxiety and stress-related disorders, including adjustment disorders (featuring anxious, depressive or mixed moods)² or, more recently, mood-related conditions, such as demoralization.³ On these bases, research has mostly relied on assessment tools exploring anxiety, depression or somatization (e.g. the Hospital Anxiety and Depression Scale, the Brief Symptom Inventory-18)^{4,5} with available guidelines mainly providing recommendations on how to assess and manage anxiety and depression among cancer patients.^{6,7,8} However, other clinically important domains of distress and emotional reactions, such as irritability, hostility and anger have been overlooked in oncology.

Irritability is usually described as a condition in which a person is easily annoyed, readily prone to impatience or anger when experiencing frustration, with a reduced control over temper resulting in verbal or behavioral outbursts (e.g. aggression).⁹ Hostility, which in everyday conversation is often used as a synonym for anger and aggression, is considered as a state of deep-seated disposition and a form of emotionally charged aggressive behavior.¹⁰ Although there are differences between these constructs, they are often used in an interchangeable and sometimes imprecise way. In a recent multicenter study of irritability involving ten different countries, for example, many participants equated irritability with anger, making not easy the evaluation of these intertwined dimensions.^{11,12} This overlap is apparent in the Diagnostic and Statistical Manual of Mental Disorders 5th edition, as a trans-diagnostic clinical dimension, cutting across several psychiatric disorders (e.g. bipolar disorders, depression, disruptive mood dysregulation disorder)^{13,14} Irritability and hostility/anger can in fact be detected in both psychiatric and physically ill patients presenting with depression^{15,16} and bipolar disorder,¹⁷ including those with risk of suicide,¹⁸ anxiety¹⁹ and post-traumatic stress disorders.²⁰ Being part of a spectrum of mood factors (i.e. depression-dejection, tension-anxiety, anger-hostility)²¹ that can be separated but at the same time inter-associated, it is important to understand the role of these dimensions and the implications for the patient, relatives and clinicians.²²

Regarding the oncology field, some studies, carried out about 40 years ago examined, with conflicting results, anger and hostility according to a psychosomatic, "etiological" perspective, namely the role of suppression and/or control of anger as a possible personality trait associated with the risk or progression of cancer.²³ In contrast, limited evidence is available on the clinical role of the interwoven dimensions of irritability, hostility and anger in terms of prevalence and influence on patients' quality of life and other psychosocial aspects of cancer.²⁴

In a study of distress among 126 cancer patients, 18.3% showed moderate to high levels of hostility as assessed by using the Brief Symptom Inventory Hostility scale (BSI-HOS).²⁵ In a further larger investigation of about 600 medically ill patients, including cancer patients, Irritable Mood was assessed through the Diagnostic Criteria for Psychosomatic Research (DCPR).²⁶ DCPR Irritable Mood is defined as “a feeling state characterized by *irritability*, requiring an increased effort of *control over temper* by the individual, or resulting in *irascible verbal or behavioral outbursts*; the experience of irritability is always unpleasant for the individual and overt manifestation lacks the cathartic effect of justified *outbursts of anger*”. The prevalence of DCPR-irritable mood in the whole sample was 27%, and 14% among breast cancer patients, in whom it was also associated with poorer quality of life (leisure activity, adjustment, support) and increase of cancer-related worries.²⁷ These data are in line with a previous Italian study of patients with solid tumors who were submitted to autologous bone marrow transplantation, 16% of whom showed anger.²⁸ Later, Mitchell et al.,^{29,30} used the multidimensional Emotional Thermometer (ET), consisting of four 0-10 visual analogue scales, rating emotional distress, anxiety, depression, and anger. The “Anger Thermometer” was able to detect cases of significant distress (cut-off score of 4) that were not identified by using the conventional Distress Thermometer (DT) only. Again, “caseness” of anger on the Anger-ET was found in 15% of 149 breast cancer patients³¹ and in 24% in a large sample of over 2,000 cancer patients,³² in 18% of 158 long-survivors of cancer by using the Anger/Hostility dimension of the Profile of Mood states (POMS),³³ and in 28% out of 147 cancer patients by using the BSI-HOS subscale.³⁴ This suggests the importance of carefully exploring these dimensions among the several emotional reactions to cancer in structured program for early screening in cancer care seems necessary and clinically useful.^{35,36}

Given these premises, the aim of this study were (i) to explore the prevalence of hostility-related symptoms among cancer patients, and (ii) to examine the association of this clinical dimension with psychiatric diagnoses and with other psychosocial features, such as coping with cancer and quality of life.

2. METHODS

Design

The study has a cross-sectional study design.

Participants

The study is based on the analysis of a convenience sample of cancer patients recruited from the outpatient services of four hospitals in two different areas (University S. Anna Hospital, Ferrara, and three other hospitals of Community Health Authorities, in the province of Ferrara, Northern Italy). Participants were contacted by the research assistants of the psycho-oncology

service during clinical consultations. Inclusion criteria were: (i) having received a diagnosis of cancer in the previous 6 months; (ii) age between 18 and 70; (iii) a Karnofsky Performance Status scale higher than 80; (iv) no clinically significant cognitive deficits (as clinically assessed to explore orientation in time, space, and person; attention and concentration; capacity to read and write; and memory); (v) absence of the Central Nervous System involvement (e.g. brain tumors or metastases, side-effects of therapy) and a diagnosis of severe psychiatric disorders (e.g. schizophrenia, bipolar disorders). The study was approved by the regulations and ethics of the Committee for the Protection of Persons as adopted by the Local Health Trust (Azienda Sanitaria Locale di Ferrara, Ferrara, Italy) and University of Ferrara and conducted accordingly. After each patient provided his/her written consent to participate, an individual appointment was planned in the outpatient cancer service.

Assessments

World Health Organization Composite International semi-structured Interview (WHO-CIDI).

Psychiatric diagnoses of participants were obtained according to the International Classification of Disease 10th edition by using the Italian version of the World Health Organization Composite International semi-structured Interview (WHO-CIDI), that was administered by trained interviewers, following the methodology we applied in a previous research in oncology.^{37,38}

Brief Symptom Inventory-53 (BSI-53)

Participants were also administered the Brief Symptom Inventory-53 (BSI-53), a self-report 53-item questionnaire rating the frequency of various symptoms in the past seven days.³⁹ Items are rated on 0-4 Likert scale (from 0=not at all to 4=Extremely). Scores of the Hostility subscale (BSI-HOS, comprising 5 items, e.g. "Feeling easily annoyed or irritated"; "Getting into frequent arguments"; range score: 0-20,) and the other BSI-53 subscales (Depression, Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Anxiety, Phobic Anxiety, Paranoid Ideation, and Psychoticism) were calculated according to the scoring system used in previous Italian studies.³⁸ Also, for correlational purposes, we calculated the scores of 3 general BSI-53 scores, namely the Grand Total (GT; sum of the raw scores of the 53 items), the Positive Symptom Total (PST; number of all "non-zero" responses made by the patient), the Positive Symptom Distress Index (PSDI) (obtained by dividing the GT by the PST), and the General Stress Index (GSI; sum of the raw scores of the 53 items/53). In order to find clinically significant hostility on the BSI-HOS, we categorized hostility cases (yes/no) according to both the case-rule system (conversion of the raw score in standardized T scores, cases= $T \geq 63$)³⁹ as well as raw scores (case= $\text{mean} + 1\text{SD}$), following what done by other authors who used the same tool to identify hostility cases.²⁵ Furthermore, we employed an additional empirical criterion to compare the sample by different levels of hostility: no/low (only "Not at all" or "A little bit" responses), high (any

“Quite a bit” or “Extremely” response in hostility items), and moderate hostility (the remainder of responses), as also done in a previous study.⁴⁰

Mini-Mental Adjustment to Cancer Scale (Mini-MAC)

The Mini-Mental Adjustment to Cancer Scale (Mini-MAC)⁴¹ was used to assess coping mechanisms. It is a 29-item scale evaluating the cognitive and behavioral responses to cancer on 4-point Likert scale, through four sub-scales: Fighting Spirit (FS) (4 items; e.g. “I am determined to beat this disease”; range score: 4-16), Hopelessness (H) (8 items, e.g. “I feel completely at a loss about what to do”; range score: 8-32), Anxious Preoccupation (AP) (8 items; e.g. “I worry about the cancer returning or getting worse”; range score: 8-32), Fatalism (FA) (5 items; e.g. “I’ve put myself in the hands of God”; range score: 5-20), and Cognitive Avoidance (CA) (4 items; e.g. “I distract myself when thoughts about my illness come into my head”; range score: 4-16). The scale showed good psychometric properties in the Italian validation study.⁴²

Other measures

A subset of 143 patients (not statistically different from the global sample) who were part of a study on psychosocial variables in cancer,⁴³ were also assessed for cancer-related worries, the capacity to openly talk about these worries within the family, and quality of life, already used in other Italian studies of cancer patients.⁴⁴

The Cancer Worries Inventory (CWI)⁴⁵, in a shorter 13-item version, was given to investigate, on a 0-4 point Likert scale, (from 0=none to 4=very much; total range score: 0-52) the intensity of concerns caused by cancer and related problems (e.g. the illness itself, the effects of treatment, feeling different from others, the impact on sexual life, the future).

The Openness Scale (OS)⁴⁶ is a 9-item questionnaire investigating, on a 1-4 scale (from “completely agree” to “completely disagree”; range score 9-36) the capacity to openly discuss cancer and cancer issues or concerns in the family (i.e. “I talk as little as possible about my illness because I don’t want to make my family uneasy”; “My partner doesn’t like me to talk about my problems”), with high scores corresponding to higher openness.

The Quality of Life Index (QOLI)^{27,44} was used to examine, on a 0-10 scale, six quality of life dimensions, namely depressed mood, general well-being, physical symptoms (e.g. pain, nausea), ability to participate in leisure activity, adjustment to illness, and perceived support from interpersonal relationships. Lower scores in each domain correspond to a worse condition.

Statistical Analysis

First, distribution and frequency analyses were used to describe the sample. Cronbach’s alpha was used to estimate the reliability and internal consistency. Student t-test, ANOVA and χ^2 test were used to compare hostility levels across subgroups and samples. The correlation of hostility with other clinical dimensions was estimated with Pearson’s r and multiple linear

regression. Also, we decided to compare the levels of hostility with those obtained from other clinical populations, by analyzing the BSI-HOS scores of our sample with those derived from previous studies we carried out in Italian individuals attending primary care services,⁴⁷ including those without medical disorders, patients with drug abuse and HIV infection or patients with drug abuse and HCV infection^{48,49}, and patients with various psychiatric disorders (e.g. schizophrenia, bipolar disorders).⁵⁰ Since normative data on the Italian general population for the BSI-53 do not exist, besides a study on the elderly⁵¹ or young nomophobic people,⁵² we took into consideration both individuals with no medical condition among primary care attenders, as above described, and normative data for the original US report⁵³ and a British study,⁵⁴ in spite of possible cultural differences.

3. RESULTS

Characteristics of the sample

Of 605 patients meeting recruitment criteria, 522 (86.3%) accepted and 83 declined to participate (31 felt tired and not well to wait; 11 had transportation problems; 42 did not have interest in take part in the study). No difference was found between those who accepted and those who declined participating in the study. Complete data were available for 516 individuals (99%) (Table 1).

Please insert Table 1 about here

Prevalence of hostility with different case ascertainment criteria

The BSI-HOS scale was found to have good level of internal consistency (Cronbach's $\alpha=0.88$), similar to that of other BSI scales.^{38,47-50} Patients with moderate to extreme irritability (i.e. feeling easily annoyed or irritated; getting into frequent arguments) were more frequent than more marked expression of anger and aggressiveness (i.e. having urges to beat, injure, or harm; having urges to break or smash things) (Table 2).

According to the BSI-HOS case-ruling 109 patients (21.1%; 95%CI: 17.5% – 24.6% - both using the T and raw score systems) resulted to be “cases” of hostility. According to the BSI-HOS score severity, 329 patients (63.8%) reported no/low, 127 (24.6%) moderate, and 60 (11.6%) high levels of hostility. Compared with subjects with moderate or low hostility, patients with high hostility had higher scores in on the Grand Total (GT), Positive Symptom Total (PST) and Positive Symptom Distress Index (PSDI) (all $p < 0.01$) (Table 3).

Please insert Table 2 and 3 about here

Hostility and ICD-10 psychiatric morbidity

A significant sub-set of the sample (n=214, 41.4%) received an ICD-10 diagnosis of psychiatric disorder. The most common was Adjustment disorder (ADJ, n=107, 21.5%) followed by mood disorders (n=71, 13.8%; comprising Major Depression-MDD, n=51, 9.9%; dysthymia and other depressive disorders n=20, 3.9%) and anxiety disorders (AD, n= 32, 6.2%).

Patients who met the criteria for any psychiatric diagnosis displayed higher BSI-HOS scores than ICD-10 non-cases (n=302, 58.2%) (0.63 ± 0.65 vs 0.24 ± 0.33 , $t=8.79$, $df=514$, $p<0.01$). Patients with ADJ had lower BSI-HOS scores (0.48 ± 0.52) than those with MDD (0.8 ± 0.81) or AD (0.89 ± 0.78) but not significantly different by those with dysthymia or other forms of depression (0.58 ± 0.46) (general F between groups =3.66, $df=4$, $p<0.01$)

Of those without ICD-10 psychiatric diagnoses, 31 (out of 302=10.2%) were BSI-HOS cases, while of 214 ICD-10 cases, 138 (out of 214=64.4%) were BSI-HOS non-cases ($\chi^2=48.4$, $p<0.01$). Examining the distribution of patients having no/low hostility in comparison with moderate and high hostility, 20.6% (n=63) of ICD-10 non-cases were moderately (n=50) or highly (n=13) hostile and, vice versa, 92 out of 214 (42%) ICD-cases were no/low hostile ($\chi^2=75.1$, $df=2$, $p<0.01$).

Psychosocial correlates of hostility

BSI-HOS scores were not associated with age ($r=-.04$, $p=.32$), gender ($F=0.31$, $df=1$, $p=.57$), or cancer site ($F=.56$, $df=3$, $p=.81$). Patients who were free from cancer had higher BSI-HOS scores than those with local, local-regional or metastatic disease ($F=12.94$, $df=3$, $p=0.01$).

BSI-HOS scores correlated significantly with all other BSI-53 subscales (r range between 0.38 and 0.68, all $p<0.01$), as well as the Mini-MAC AP ($r=0.35$, $p<0.01$) and H ($r=0.33$, $p<0.01$). This association was also evident comparing AP and H scores for different levels of hostility, with increasing scores on AP and H according to the level of hostility severity ($F=22.87$, $df=2$, $p<0.01$; $F=24.29$, $df=2$, $p<0.01$, respectively) (Table 3).

We then examined the contribution of single BSI-HOS items to AP and H scores, using stepwise regression. AP was significantly associated with item 6 ("Feeling easily irritated") ($B=2.1$; $SE=.31$, $\beta=.32$, $t=6.83$, $p<0.01$) and item 41 ("Having urges to break or smash things") ($B=1.31$; $SE=.51$, $\beta=.12$, $t=2.59$, $p<0.01$) scores, accounting for 14% of their variance ($F=32.93$, $p<0.01$). H was associated with item 6 ($B=1.24$; $SE=.26$, $\beta=.23$, $t=4.7$, $p<0.01$), item 40 ("Having urges to beat, injure, or harm someone") ($B=1.55$; $SE=.48$, $\beta=.15$, $t=3.21$, $p<0.01$), and item 46 "Getting into frequent arguments") ($B=.08$; $SE=.34$, $\beta=.11$, $t=2.33$, $p<0.05$) which entered the equation accounting for 13% of the explained variance ($F=19.92$, $p<0.01$).

BSI-HOS score was also negatively correlated with the Openness scale ($r=-.22$, $p<0.01$) and positively with the CWI Total and single items' scores (r range from 0.21, to 0.44, $p<0.01$; e.g. the future, feeling different from others, relationship with my partner; relationships with

others). Also most dimensions of the QOL-I (i.e. bad mood, leisure poor coping, poor support ($p < 0.01$) were associated with BSI-HOS (see supplement table 1 for details)

Comparison of hostility with other populations

Cancer patients had significantly lower BSI-HOS scores than patients with psychiatric illnesses ($n=200$; $t=6.57$, $p < 0.01$) and individuals with HIV ($n=247$; $t=13.89$, $p < 0.01$) or HCV infection plus drug abuse ($n=218$; $t=11.83$, $p < 0.01$) and individuals attending primary care with medical disorders ($n=1,181$; $t=4.16$, $p < 0.03$). Of the latter group those with no medical disorders ($n=208$), cancer patients showed higher BSI-HOS scores ($t=1.16$, $p < 0.04$) (see Tab. 2 for details). The mean on BSI-HOS of our sample was also higher with respect to the original US community normative data ($n=719$, 0.32 ± 0.42 , $t=4.42$, $p < 0.02$) and other normative samples (Italian healthy elderly $n=462$, 0.37 ± 0.50 ; $t=2.11$, $p < 0.03$; British sample $n=376$: 0.44 ± 0.6 , $p=ns$). When analyzing the distribution of responses to the single BSI-HOS items statistical differences between samples were found in all the investigated BSI-HOS items ($p < 0.01$) (supplement Fig. 1).

4. DISCUSSION

While anxiety and depression are commonly assessed among cancer patients, irritability, hostility, irritability, hostility and anger have been under-recognized, in spite of their importance both in terms of transdiagnostic implications and as a facet of distress possibly associated with patients' quality of life. Therefore, we estimated the prevalence of this clinical dimension, as assessed by the BSI-HOS, in a population of cancer outpatients, by employing different operational criteria, and found hostility "caseness" in about one-fifth of the population. This figure was quite similar to what reported among patients with other medical conditions, and higher than normative samples, although mostly taken from international studies, given the unavailability of specific Italian data. With respect to Italian patients with HIV infection and those with mental illness (e.g. schizophrenia, severe depression, personality disorder, intravenous drug abuse in comorbidity with HIV or HCV infection), who, however, are generally considered population at higher risk for aggressive behavior, cancer patients' BSI-HOS scores were lower. Similar results were obtained when examining the level of hostility (grades of severity). However, the association between psychiatric disorders and hostility was confirmed also in our sample since the BSI-HOS score of cancer patients who had an ICD-10 psychiatric diagnosis was higher (and comparable with the abovementioned populations) than cancer patients without an ICD-psychiatric diagnosis. Highest scores were shown among those who received a diagnosis of major depression or anxiety disorders, followed by patients with a diagnosis of adjustment disorder and other forms of mood disorders (e.g. dysthymia). This supports the trans-diagnostic

role and value of irritability and anger which is in fact part of the criteria of different psychiatric diagnoses.^{13,14} Regarding adjustment disorders which is one of the most frequently diagnoses among cancer patients² and medically ill patients in general,⁵⁵ it is interesting to note that, again, ICD and usual psychiatric nosology (e.g. DSM) classify this clinical condition in sub-categories, namely with anxious mood, with depressed mood, with anxious/depressed emotional features. According to our findings and the need to better define adjustment disorders in medical settings, it would be interesting to more specifically characterize this category by adding the further specifier "with hostility or irritable mood", as already done for demoralization which has been proposed to be a further specifier of adjustment disorders.^{56,57}

Hostility however, was also found in non-ICD-10 cases cancer patients, of whom 20% of showed levels of moderate or severe hostility and 10% were true BSI-HOS cases. In contrast, 60% of ICD-cases were BSI-HOS non-cases, with 40% of patients with no to low hostility levels still having a psychiatric diagnosis. These findings seem to suggest that symptoms of irritability, hostility and anger are not necessarily or exclusively part of a psychiatric disorder, but can be by themselves a distressing condition in patients who did not receive a formal psychiatric diagnosis. This finding is in line with studies showing that a quite significant percentage (35-40%) of cancer patients suffering from clinically relevant and distressing psychosocial states (e.g. health anxiety, irritable mood, demoralization), as assessed via a specific interview (i.e. the DCPR) are not detected when classical psychiatric nosography systems, such as the DSM or the ICD,⁵⁸ are used. Taken together these data seem to confirm the few studies indicating that hostility should be part of assessment as a further manifestation of distress, besides anxiety and depression.^{25,29,30} Our data are also in line with the possibility that, when hostility is part of a psychiatric disorder, it is a dimension within a spectrum of mood-related factors (i.e. depression-dejection, tension-anxiety, anger-hostility)²¹. This can be significant in a transdiagnostic sense, especially in those with clinical depressive disorders, as also shown in preliminary study of prostate cancer patients.⁵⁹

As a further result of this study, hostility scores appeared to be significantly associated with maladaptive coping, especially the tendency to adopt a pessimistic attitude about the illness (hopelessness), and to have anxiety and tension concerning the illness (anxious preoccupation). Maladaptive coping was especially found among patients with moderate to high levels of hostility. Being easily annoyed and irritated, getting into frequent arguments, having urges to break or smash things or to react towards others, but not temper outbursts out of control, were associated with maladaptive coping. The fact that hostility was not associated with fighting spirit or other non-maladaptive coping mechanisms (e.g. avoidance) corroborates the conclusion that hostility is one of dimensions of distress rather than a healthy emotional reaction. These findings are also in agreement with a recent study of patients with gastrointestinal cancer showing that irritability was positively related to a negative illness

perception (how illness is perceived by a patient in terms of violation of one's important beliefs and goals) and poorer levels of adaptive coping (meaning in life and problem-focused coping).⁶⁰

An interconnected finding is that quality of life was negatively associated with hostility, with low levels of leisure activities, support from others, coping and wellbeing. These data reinforce that not only anxiety and depression, but also other dimensions, such as hostility, are related to a decrease of quality of life, as in part already shown in a previous study of breast cancer patients.²⁷

Hostility showed to be associated with a number of cancer-related concerns, with hostile patients reporting higher scores on most areas explored by the CWI, Economic issues, relationships with other and the family, including sexual life with the partner, and feelings to be different from others were the most significant concerns among patients showing hostility.

These aspects could be interpreted as a possible degree of alienation and isolation as a result of the impairment in the regulation of patients' emotions, as expressed by their hostility, that understandably tend to drive people away from the patient.⁶¹ Interestingly, patients with high BSI-HOS scores were also less likely to talk about their cancer and cancer worries and to openly express their concerns and feelings within the nuclear family (including the husband-wife pair and children). These data deserve more exploration since the measurement of openness to discuss cancer in the family may contribute to better understand the factors intervening in interpersonal communication during the time of a crisis, as the one caused by cancer. Although we did not specifically assess the dynamics of family environment, it is possible that irritability and hostility may influence, as it has been shown for depression or anxiety, the family ways of dealing with their relative who is ill.^{62,63,64,65} Furthermore, there are data indicating that feelings of irritability and hostility influence interpersonal relationships in different contexts, because of the tendency of hostile people to blame others for negative events.⁶⁶ For physicians, nurses, and other health professionals involved in cancer care, for example, communicating with angry patients is notoriously more stressful than communicating with anxious or depressed patients,^{67,68,69} since in general hostility tends to elicit a negative response from others, because of the relational (counter-transferral) mechanisms activated, while the expression of anxiety or sad mood might usually elicit sympathy and empathy from others.^{63,70} For these reasons and the complexity of this clinical area, specific communication skills training modules on the management of anger in cancer patients have been developed.^{71,72}

5. STUDY LIMITATIONS

There are several limitations to be taken into account. First, hostility was examined through a short scale derived from the BSI-53, while more precise data could have been gathered by using specific tools.⁷³ The BSI-HOS seems to mix together issues related to a sense of constant irritability (e.g. feeling easily annoyed and irritated, getting into frequent arguments) to acute manifestations of anger (e.g. having urges to beat, injure, or harm or having uncontrollable outbursts of anger). On the other side, specific hostility and irritability scales are not available in oncology settings, and no item in most available scales (e.g. HADS, BSI-18) besides the 0-10 VAS Anger-Thermometer, regards hostility or irritable mood. Only recently the Irritability Scale-Initial Version (TISi) has been developed and applied in cancer settings, although in a small number of patients.⁷⁴ This could favor the overcoming of the existing definitions that typically fail to distinguish irritability from related constructs (i.e. anger, aggression, and hostility), which have in fact different emotional, affective, physiological, cognitive, and behavioural components.⁷⁵ A second limitation is that because of the cross-sectional nature of our study, we cannot determine the way in which hostility change across time and the causes related to this possible change. Further data are also needed with respect to the diagnosis of cancer, since in our study most were represented by breast cancer. This indicate the need for a detailed analysis of the multiple dimensions of hostility, irritability and anger according to the different cancer sites. A last limitation is that, we did not examine the possible factors associated with hostility, including personality and temperamental traits, or previous episodes of hostile behaviour and their duration when facing stressful events.

6. CLINICAL IMPLICATIONS

The clinical significance and implications of the study regard the role of hostility (and not only the more common and usually explored dimensions of anxiety and depression) as a condition favouring the patients' distress and psychosocial functioning, including coping and quality of life. Furthermore, a regular assessment of hostility and anger responses should be considered also in terms of the implications for doctor/staff-patient relationship. Unchecked anger can not only alienate family and friends or cause disruptions in the relationship but also undermine or be an obstacle to the relationship between health care professionals and hostile cancer patients, frequently creating an escalation of ineffective communication which easily induces the staff to label them as "difficult" patients. Further studies should examine the prevalence, in clinical settings, of cancer patients who need psychosocial intervention but who have been not detected by the usual assessment systems of distress (e.g. HADS, DT, BSI-18). Also more research is necessary to understand the clinical outcome of hostile or irritable patients in terms

of psychosocial adjustment to cancer, such as quality of life, interpersonal relationships, coping with stress, or health related behaviors.

7. CONCLUSIONS

In summary, the findings of our study strongly suggest the need to explore hostility and irritability which, apart from a few exceptions, is not usually considered in screening for psychosocial distress, as the 6th vital sign.⁷⁶⁷⁷⁷⁸ In fact, by enlarging the assessment of a full-range of needs and symptoms, such as feelings of irritability and hostility, frustration upon little provocation and anger, both when associated trans-diagnostically with specific psychiatric disorders (e.g. depressive, anxiety or adjustment disorders) or when being the only condition affecting the patients and standing by itself, could improve the detection and treatment of an area negatively influencing coping and quality of life. Since it has been shown that distress related to anxiety and depression can exert detrimental consequences on the individual quality of life and psychosocial functioning,⁷⁹ the analysis of irritability and hostility is important with this respect.

DATA AVAILABILITY STATEMENT

Data available on request due to privacy/ethical restrictions

DECLARATIONS

The study, as part of the University of Ferrara projects was approved by the Regulations and Ethics of the Committee for the Protection of Persons as adopted by the Local Health Trust (Azienda Sanitaria Locale di Ferrara, Ferrara, Italy) and the University of Ferrara (≠20074XMRSE and ≠SI2.307317-2000CVGG2-026), in agreement with the Good Clinical Practice Protocols and Declarations.

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Table 1. Socio-demographic and clinical characteristics of the sample

| | | | |
|------------------------|--------------------------------|------------------------|---------------|
| Age (yrs) | 54.91 (SD 10.75, range: 19-75) | Cancer site | |
| | | Gastrointestinal | 93 (18%) |
| Sex, | | Breast | 219 (42.4%) |
| Male | 178 (34.5%) | Genito-urinary | 106 (20.5%) |
| Female | 338 (65.5%) | Respiratory | 74 (14.3%) |
| | | Other | 24 (4.65%) |
| Education (yrs) | 9.34 (SD 4.38, range 5-22) | | |
| Marital status | | Stage | |
| Never-married | 41 (7.94%) | Local disease | 230 (44.57%) |
| Separated/divorced | 34 (6.58%) | Loco-regional | 147 (28.48%) |
| Married | 332 (64.14%) | Metastatic | 120 (23.25%) |
| Widowed | 109 (21.1%) | Free from disease | 19 (3.68%) |
| Occupation | | Treatment | |
| Employed | 168 (32.55%) | Chemotherapy | 259 (50.2%) |
| Unemployed | 78 (15.1%) | Chemo + Radiotherapy | 68 (13.2%) |
| Housewives | 123 (23.83%) | Hormone | 189 (36.6%) |
| Retired | 128 (24.8%) | | |
| Other | 12 (2.32%) | | |
| Unknown | 7 (1.35%) | Karnofsky score | 96.4 (SD 8.1) |

Table 2. Comparison of hostility among patients with different clinical conditions

| | Cancer (n=516) | PCA with no medical disorder (n=208) | PCA with medical disorders (n=1,189) | HIV+ DU (n=247) | HCV+ DU (n=218) | Psychiatric disorders (n=200) |
|---|---------------------------|---|---|----------------------------|----------------------------|--|
| Age | 55.5 (11.1) | 42.8 (14.7) | 56.6 (11.25) | 31.7 (4.6) | 27.3 (5.9) | 43.53 (11.3) |
| BSI-HOS | 0.44 (0.53) | 0.39 (0.5) | 0.58 (0.68) | 1.1 (0.76) | 1.0 (0.77) | 0.77 (0.76) |
| BSI-Hostility Distribution of item responses (%) | | | | | | |
| <i>Item 6: Feeling easily annoyed or irritated</i> | | | | | | |
| No | 44.4 | 36.3 | 27.3 | 15.0 | 15.3 | 27.9 |
| A little | 26.0 | 38.6 | 34.9 | 32.5 | 31.6 | 27.0 |
| Moderately | 20.5 | 15.9 | 23.5 | 25.6 | 25.6 | 23.5 |
| Quite a bit | 6.5 | 6.7 | 10.3 | 17.9 | 19.1 | 17.5 |
| Extremely | 2.5 | 2.4 | 4.1 | 8.9 | 8.4 | 4.1 |
| <i>Item 13: Temper outbursts that you could not control</i> | | | | | | |
| No | 72.7 | 58.5 | 51.1 | 52.4 | 51.2 | 64.5 |
| A little | 17.2 | 24.6 | 30.5 | 29.0 | 30.9 | 13 |
| Moderately | 6.6 | 14.0 | 10.7 | 9.3 | 8.8 | 15 |
| Quite a bit | 2.7 | 1.9 | 4.9 | 5.6 | 6.0 | 5 |
| Extremely | 0.8 | 0.9 | 2.7 | 3.6 | 3.2 | 2.5 |
| <i>Item 40: Having urges to beat, injure, or harm someone</i> | | | | | | |
| No | 89.9 | 90.5 | 80.9 | 45.2 | 46.1 | 71.9 |
| A little | 6.6 | 6.8 | 10.8 | 28.6 | 27.2 | 15.4 |
| Moderately | 1.6 | 2.3 | 4.6 | 16.9 | 17.1 | 7.5 |
| Quite a bit | 1.4 | 0.5 | 2.4 | 5.2 | 5.5 | 3.1 |
| Extremely | 0.6 | 0.5 | 1.3 | 4.0 | 4.1 | 2.1 |
| <i>Item 41: Having urges to break or smash things</i> | | | | | | |
| No | 89.9 | 87.5 | 76.8 | 63.2 | 61.8 | 67.9 |
| A little | 5.6 | 9.2 | 13.2 | 17.8 | 19.4 | 15 |
| Moderately | 2.7 | 2.3 | 6.1 | 7.7 | 7.8 | 7.5 |
| Quite a bit | 0.8 | 0.5 | 2.4 | 8.1 | 8.3 | 7.5 |
| Extremely | 1.0 | 0.5 | 1.6 | 3.2 | 2.8 | 2.1 |
| <i>Item 46: Getting into frequent arguments</i> | | | | | | |
| No | 76.9 | 66.7 | 59.5 | 38.9 | 39.4 | 59 |
| A little | 15.7 | 24.7 | 24.9 | 37.7 | 37.0 | 20 |
| Moderately | 5.8 | 7.7 | 10.2 | 15.4 | 14.8 | 14 |
| Quite a bit | 1.4 | 0.3 | 3.6 | 4.9 | 5.1 | 6.5 |
| Extremely | 0.7 | 0.2 | 1.8 | 3.2 | 3.7 | 0.5 |

Legend: PCA: Primary Care Attenders; HIV+ DU (Human Infection Virus positive, drug users; Hepatitis C Virus positive, drug users

Table 3. Mean and SD on Mini-MAC scales and BSI global distress parameters according to the grade of Hostility

| | No/low hostility (n=329) | Moderate hostility (n=127) | Severe hostility (n=60) | F | p |
|--------------------------|-----------------------------|----------------------------------|----------------------------|--------|------|
| Mini-MAC | | | | | |
| Fighting Spirit | 12.15 ± 2.43 | 12.39 ± 2.23 | 12 ± 2.33 | 0.63 | ns |
| Anxious Preoccupation | 17.33 ± 5.54 | 20.71 ± 6.31 | 23.91 ± 6.52 | 28.72 | 0.01 |
| Fatalism | 14.72 ± 3.34 | 14.54 ± 3.31 | 15.25 ± 3.59 | 0.64 | ns |
| Hopelessness | 11.66 ± 4.29 | 12.44 ± 4.74 | 17.39 ± 7.97 | 24.86 | 0.01 |
| Avoidance | 11.46 ± 3.51 | 11.41 ± 3.28 | 11.34 ± 3.64 | 0.05 | ns |
| | | | | | |
| BSI | | | | | |
| GT | 20.68 ± 17.83 | 41.02 ± 21.86 | 65.05 ± 29.08 | 140.37 | 0.01 |
| PST | 13.41 ± 8.85 | 22.90 ± 9.43 | 29.63 ± 10.43 | 106.65 | 0.01 |
| PSDI | 1.45 ± 0.37 | 1.73 ± 0.36 | 2.15 ± 0.46 | 101.34 | 0.01 |

Legenda: GT: Grand Total (sum of the raw scores of the 53 items); PST: Positive Symptom Total (number of all "non-zero" responses made by the patient); PSDI: Positive Symptom Distress Index (GT by the PST).

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