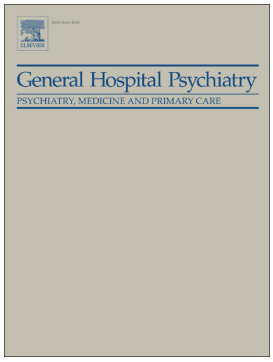

Existential distress in advanced cancer: A cohort study

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Abstract

Objective: Clinically significant existential distress may impair quality of life and communication about illness. We investigated the presence of existential distress in the form of demoralization, death anxiety, and dignity-related distress, and its co-occurrence with mental disorders in patients with advanced cancer.

Methods: We conducted structured clinical interviews and administered self-report questionnaires to assess existential distress and mental disorders. We recruited patients with different Union for International Cancer Control (UICC) stage IV solid tumors from in- and outpatient oncology and palliative care settings.

Results: A total of 671 patients completed assessments (55% participation rate, 48% female, primary tumor site: 28% lung, 14% prostate, 11% breast). Clinically relevant levels of existential distress were present in 46.4% (95% CI, 41.7% to 51.1%), including demoralization, 12.5% (95% CI, 9.6% to 15.9%), death anxiety, 27.3% (95% CI, 23.2% to 31.6%), and dignity-related distress, 38.7% (95% CI, 34.2% to 43.3%). Frequent existential distress symptoms were sense of entrapment and fear of own and close others' suffering. Mental disorders occurred in 26.2% (95%CI 22.2% to 30.4%), including major depression, 8.6% (95%CI, 6.2% to 11.5%), anxiety disorders, 8.4% (95%CI 6.0% to 11.3%), and ICD-11-adjustment disorder, 10.5% (95%CI 7.9% to 13.7%). Existential distress and mental disorders co-occurred in 20.0% (95%CI 16.4% to 24.0%).

Conclusion: Existential distress is a common, clinically significant problem in patients with advanced cancer. Its recognition in multiprofessional clinical settings can contribute to improve quality of life. Most patients with a mental disorder show comorbid existential distress requiring treatment of both.

Key words: advanced cancer, existential distress, death anxiety, demoralization, dignity-related distress, mental disorder, psycho-oncology

Introduction

Coping with incurable cancer often involves dealing with profound pain. The nature of this pain has often been described as 'existential' [1,2]. Yalom [3] has defined existential distress as the psychological challenge adjusting to fundamental givens of life. In advanced cancer, authors have suggested that such existential distress involves an emotionally painful psychological state that can occur when facing a limited life expectancy, uncertainty about the future, and loss of physical functioning [4–8]. The following existential distress symptoms have been commonly described in this population: the fear of death and dying, fear of uncontrollable suffering or prolonged dying, the fear of becoming a burden to others, feeling helpless and trapped, alone, or worthless and undignified [9,10]. Despite long-standing observations of such suffering at the end of life, there is significant insecurity among health care professionals from all disciplines about how to adequately detect and address existential distress [11]. As medical treatment options have improved and survival extended, existential distress remains one underinvestigated aspect that can significantly impair mental health and quality of life.

There are different approaches to conceptualize and assess the above-mentioned aspects of existential distress in advanced cancer [9,10]. Death anxiety is one concept that has been further developed and validated in recent years [12]. The death anxiety concept in severe physical illness refers to fears about the future, concerns about the impact of death on close others, about not having enough time and prolonged suffering [13]. Demoralization, as defined by Clarke and Kissane [14], describes a state of lowered morale and poor coping that involves feeling unable to see something positive in the future, as one feels stuck and removed from normally helpful and meaningful resources to deal with stressors. Fava et al. [15] similarly view a sense of helplessness, hopelessness and having failed other's expectations as characteristic for demoralization. Dignity-related distress, as conceptualized by Chochinov et al. [16], reflects a threatened sense of autonomy, bodily integrity, and identity.

Such states of existential distress may arise for example from physical limitations that can feel unbearable. They may also arise from the meaning of severe illness for close relationships, where a desire for emotional closeness can activate the fear of painful loss [17]. Existential distress may be

viewed as a response to the activation of basic human conflicts by incurable illness [3]. Such conflicts are fueled by threats of physical disintegration, separation, loss of autonomy, and self-worth and identity [6].

Addressing existential distress can be challenging for health care professionals because it can be accompanied by an urge to provide a "solution" when treating these patients. While this effect is not limited to advanced cancer, it may intensify due to limited time. Notwithstanding such challenges, existential distress has been found to respond well to relational support and open communication [18,19].

Existential distress may range in severity from transient but significant adjustment difficulties to severe, ongoing despair that can be associated with the desire for hastened death [20]. It can co-occur with major depression, anxiety or adjustment disorders and specify the symptomatology of the patient [21]. It can also occur in the absence of a mental disorder, still involving serious suffering and risk for suicidal ideation and death wishes [22].

Aims and significance of the present study

Due to medical progress and population ageing, an increasing number of individuals will live over longer periods with incurable illness. Patients who live with a limited life expectancy face the existential tension between engaging in life and coping with uncertainty about their treatment trajectory. For a significant subgroup, this tension can lead to overwhelming fear and existential distress. While the development of assessments including structured clinical interviews has raised interest in reliable estimates, systematic data on the overall prevalence of existential distress and its subtypes in this population is limited. Relatedly, the unclear comorbidity of existential distress with mental disorders limits its effective treatment in psycho-oncology and mental health settings[15]. The goal of the present study is to provide systematic comprehensive data on the prevalence of existential distress and its co-occurrence with mental disorders in patients who live with incurable disease. We specifically aim to

1) determine the overall prevalence of existential distress and of its subtypes demoralization, death anxiety, and dignity-related distress;

2) explore the association of existential distress with sociodemographic, disease- and treatment-related patient characteristics; and

3) examine the co-occurrence of existential distress with mental disorders including affective, anxiety, and adjustment disorders.

Materials and Methods

Study design

We conducted a longitudinal cohort study of which we report data of the first assessment wave (T1). The study protocol [23] was registered at ClinicalTrials.gov (NCT04600206). The study received ethics approval from the institutional research ethics committee (reference number LPEK-0177).

Participants and procedures

We recruited patients with advanced cancer from oncological and palliative care outpatient and inpatient clinics at the University Cancer Center Hamburg (University Medical Center Hamburg and affiliated hospitals located in the Hamburg metropolitan region) between October 2020 and June 2023. Eligible patients were at least 18 years old and diagnosed with advanced cancer as defined by Union for International Cancer Control (UICC) stage IV solid tumors. We did not include patients with hematological cancer due to lack of comparable criteria to differentiate incurable stages of disease in this population. We included patients across all phases of advanced disease from diagnosis to terminal stages to reflect a cross-section of treatment settings, tumor entities and time since diagnosis. Exclusion criteria were severe cognitive or physical impairment and insufficient ability to speak German to give informed consent and complete assessments.

Trained research assistants and responsible physicians screened all patients admitted for treatment at clinics consecutively for eligibility. Research assistants informed eligible patients about the study and obtained written informed consent. The diagnostic interview was subsequently conducted by the recruiting research assistant face-to-face (inpatient settings) or via telephone

(outpatient settings). Research assistants held a bachelor's degree in psychology or were fourth-year medical students. Patients returned paper-pencil self-report questionnaires via mail. Family caregivers were also assessed for existential distress as part of the study. Results will be published separately.

Measures

We extracted *disease- and medical care-related characteristics* from patients' medical charts. *Sociodemographic characteristics* were assessed by a standardized self-report questionnaire. For non-responder analyses, basic sociodemographic and medical data were recorded from non-participants upon their consent.

Existential distress subtypes

Demoralization was assessed by the *Demoralization Interview* [24]. The interview assesses demoralization as a response to a stressful event like the diagnosis of advanced cancer. It employs a diagnostic procedure according to the procedure established for the assessment of mental disorders. The structured interview assesses the presence of 14 demoralization symptoms with yes/no responses. Two further questions assess whether demoralization symptoms cause significant distress and/or impairment in social, vocational, or other functioning. The criteria for a diagnosis of demoralization are met if six symptoms and either significant distress or functional impairment are present (Cronbach's α =0.81).

Death anxiety was assessed by the 15-item self-report *Death and Dying Distress Scale* (DADDS; 13, 25). The scale was specifically developed to assess concerns related to death and dying in patients with advanced cancer. Items are answered on a 6-point Likert scale from 0 (no distress) to 5 (extreme distress) (Cronbach's $\alpha = 0.94$). A death anxiety symptom was rated present for items scored ≥ 3, indicating significant distress. The threshold for presence of significant death anxiety was endorsement of at least 6 out of 15 possible symptoms.

Dignity-related distress was assessed by the 7-point *Sense of Dignity Item* ranging from 0 (no sense of loss of dignity) to 6 (extreme sense of loss of dignity) [26] and six 5-point items from the *Patient Dignity Inventory* [27]. The latter range from 1 (no problem) to 5 (an overwhelming problem) and reflect the *loss of autonomy* (Cronbach's $\alpha = 0.81$) and *identity and body image concerns*

(Cronbach's α=0.83) factors of the German version. Dignity related distress was rated present when one of the following criteria were met: at least 3 of all 7 dignity items scored ≥ 3 and/or sense of dignity item scored ≥ 3 [26].

Mental disorders

Mental disorders were assessed by the *Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders-5 (SCID-5)*. The German version showed acceptable interrater reliability (κ ≥ 0.70)[28]. Adjustment disorder was assessed according to the definition of the International Classification of Diseases-11 (ICD-11) by the German *Adjustment Disorder Module of the Composite International Diagnostic Interview (CIDI)* [29] (κ=0.8).

Statistical analysis

We estimated prevalence rates with 95% Clopper-Pearson confidence intervals. We tested the association of demographic and medical characteristics with existential distress using logistic regression analyses in a simultaneous model including all predictors. Non-responder analyses were carried out calculating a logistic regression analysis with predictors age, sex, education, tumor group, treatment setting, and time since first diagnosis. Missing data in self-report questionnaires occurred in 2.9% of all data and were mean-imputed. All analyses were conducted with SPSS version 29 [30] and R version 4.3.2 [31].

Results

Participant flow

Of 3,536 patients assessed for eligibility, 2,136 (60.4%) were excluded, mostly due to non-advanced cancer or non-solid tumors. Of the remaining 1,400 patients, 775 (55.4%) consented to participate. Figure 1 shows detailed reasons for exclusion and non-participation (‚psychological distress' refers to patients expecting an additional burden from study participation, and ‚organizational reasons' refer to difficulty in interview scheduling). Of consenting patients, 104 (13.4%) were lost before the first assessment due to physical decline, death, or other reasons (see Figure 1). The

remaining 671 patients provided data for analysis. Of these, 455 completed both diagnostic interviews and self-report questionnaires.

Compared to participants, non-participants were more often inpatients (OR=2.0, 95%CI 1.4 to 2.9), lower educated (OR=2.9, 95%CI 2.2 to 3.9), and diagnosed with lung cancer (OR=1.5, 95%CI 1.2 to 2.0). Non-participants were less often diagnosed with prostate (OR=0.5, 95%CI 0.3 to 0.9) and liver/bile cancer (OR=0.4, 95%CI 0.2 to 0.8) compared to participants. Participants and non-participants did not significantly differ in terms of age, sex, and time since first diagnosis. The 78 patients who dropped out between consent and interview/self-report assessment did not differ significantly from those completing assessments in terms of any demographic or medical factors.

Please insert Figure 1 about here

Sample characteristics

Sociodemographic, tumor-, and treatment-related characteristics of the total sample are shown in Table 1.

Please insert Table 1 about here

Prevalence of existential distress

The overall prevalence of at least one form of existential distress was 46% (Table 2) among patients who completed interview and self-report assessments. Demoralization was present in 13% of this group. The prevalence of death anxiety was 27%. Dignity-related distress was present in 39%. Correlations across existential distress types ranged from .39 to .49 ($p<.001$).

Please insert Table 2 about here

The most frequent symptoms of demoralization, as assessed by the clinical interview, were lowered morale (50%), subjective distress (48%), and sense of entrapment (35%). Fifteen percent of the participants reported having at least once had thoughts about ending their lives to avoid feared suffering (Supplement Table S1). Patients reported on average M=2.7 out of 14 possible demoralization symptoms (SD=2.8).

The most frequent death anxiety symptoms (Supplement Table S2) concerned fears about suffering of loved ones (52%), the fear of dying in pain (34%) and the fear that the time remaining may be too short (32%). The mean number of death anxiety symptoms was M=3.6 (SD=4.3) out of 15 possible symptoms.

In terms of dignity-related distress, participants reported most frequently feeling significantly distressed due to their physical symptom burden (46%) and that their sense of identity was threatened (41%) (Supplement Table S2). Twenty-six percent felt that their general sense of dignity was impaired. Patients reported on average M=2.0 out of 7 possible dignity-related distress symptoms (SD=2.1). The average total number of existential distress symptoms was M=8.1 out of 36 possible symptoms (SD=7.7) across all forms of existential distress.

Association of sociodemographic and tumor, and treatment-related characteristics with existential distress

Table 3 shows the association between existential distress and sociodemographic and medical variables. In multivariate analyses, existential distress was significantly more frequent in patients younger than 40 years (OR=4.7, 95% CI, 1.4 to 15.0), patients treated in specialized inpatient palliative care units (OR=3.4, 95%CI, 1.1 to 10.4), and patients shorter than 12 months after initial diagnosis (< 6 months: OR=1.9, 1.1 to 3.4; 6-12 months: OR=2.4, 95%CI 1.3 to 4.5). Part of the effects for specialized palliative care inpatient treatment setting and time since diagnosis may be explained by aggressiveness of disease: patients with pancreatic cancer were more likely to experience high existential distress (OR=2.2, 95%CI 0.9 to 5.2, OR not significant) in the bivariate model, while

the effect decreased in the multivariate model. Existential distress was significantly less frequent in prostate cancer (OR=0.5, 95%CI, 0.3 to 1.0). There were no significant differences associated with any other demographic or medical characteristics in the multivariate model. To control for potential bias to prevalence estimates due to the pandemic, we added the time of assessment as predictor to the logistic regression analysis. There was no difference in existential distress prevalence related to recruitment during or after the Covid-19 pandemic (β=0.0, p=.12).

Please insert Table 3 about here

Co-occurrence of existential distress with mental disorders

Among patients who completed interview and self-report assessments, the prevalence of any current mental disorder diagnosis as assessed by the SCID-5 was 26.2% (95%CI 22.2% to 30.4%). Most frequent disorders included major depression: 8.6% (95%CI 6.2% to 11.5%), anxiety disorders: 8.4% (95%CI 6.0% to 11.3%), and adjustment disorder: 10.5% (95%CI 7.9% to 13.7%). Supplement Table S3 shows all diagnoses assessed in detail.

An additional 14.9% had a history of major depression that was in remission at the time of the study. Hence, 23.7% of the patients had a current or history of major depression. Supplement Table S4 shows associations of mental disorders with demographic and medical factors.

Table 4 shows the co-occurrence of existential distress and mental disorders. Of the 455 patients who completed interview and self-report assessments, 20.0% (95%CI 16.4 to 24.0) showed comorbid existential distress and mental disorders. Of patients with existential distress, 43.1% were diagnosed with a mental disorder. Of patients with a mental disorder, 76.5% showed existential distress.

Please insert Table 4 about here

Discussion

We analyzed the presence of existential distress in 671 patients with advanced cancer. Half of the patients in this study showed existential distress in the form of dignity-related distress (39%), death anxiety (27%), and demoralization (13%). The sample size allowed for precise prevalence estimates based on validated psychometric measures of key existential constructs. The associated psychological burden is profound and critically important as a therapeutic target for clinicians caring for these patients.

The prevalence of dignity-related distress was comparable to one [32], but higher than in other earlier studies [33,34]. It is conceptually and empirically more immediately linked to patients' physical symptom burden and its consequences, such as growing frailty and altered identity [35]. Death anxiety most frequently involved the concern for loved ones, fear of uncontrollable suffering and lost opportunities resulting from the awareness of limited time and progressive disease, similar to a sample of patients seeking therapy [36]. Demoralization develops when coping is impeded, hope is lost and the value and meaning of life slips away. It reflects serious adjustment difficulty that differs from temporary discouragement that can be part of normal adaptation to advanced cancer. The present demoralization and overall existential distress prevalence rates are coherent with earlier studies in advanced cancer and palliative care [37–39]. It has been suggested that prolonged dignity-related distress and death anxiety contribute to the development of demoralization as a more severe form of existential distress [40].

Existential challenges are felt more acutely by younger people due to the untimely nature of progressive illness [4], explaining the result of a higher prevalence in younger patients. Patients needing admission to inpatient palliative care units have a greater symptom burden needing treatment, which contributes to higher odds of becoming existentially distressed. This can be assuaged by the length of illness providing some prospect of adaptation to the reality of the closure of life. Existential distress did not differ with line of therapy, potentially due to varying hopes associated with new therapy lines in each tumor group.

Our study shows that most (76.5%) patients with a mental disorder have comorbid existential distress. This strong association of existential distress with comorbid mental illness may suggest that those with pre-existing mental disorders may be predisposed toward greater consequent development of existential concerns due to a vulnerability for reduced coping [41]. The overall prevalences of mental disorders in our cohort were comparable with a large national German epidemiology study [42] and an international review [43]. Simultaneously, many patients have substantial existential distress that is not comorbid with a mental disorder. This may suggest an etiological role of existential distress leading to mental disorder for individuals without prior history of mental illness that requires further longitudinal study.

The present data encourage scholars to expand the conceptualization of clinically significant psychological suffering at the end of life to encompass both mental disorders and existential distress. Attention toward the existential nature of suffering at the end of life may inform policy debates regarding end-of-life care. In jurisdictions that allow for medical assistance in death, existential suffering that does not meet mental disorder criteria may be an important reason why some individuals seek this service [44]. The rather high reports of desire for death after diagnosis in this study lend support to this idea.

Clinical implications

Attention toward existential distress is required to facilitate quality of life in advanced cancer [45]. Clinicians should be aware of the higher risk for existential distress in patients with pre-existing mental disorders. Moreover, younger patients, those recently diagnosed and those in terminal stages treated in inpatient palliative care settings are vulnerable groups. Dignity-conserving care is one approach to address related distress in medical settings. As it seeks to value personhood, a central tenet is that questions which reflect patients' individuality can alter the patients' sense of control [46,47]. Referral to psychosocial services is required for enduring distress, potential mental disorder or patients' wishes to discuss death and dying more extensively. Effective treatments for patients with advanced cancer include Meaning-Centered and Managing Cancer and Living Meaningfully Psychotherapy [48,19]. Patients with comorbid existential distress and mood or anxiety disorders may benefit from a treatment that addresses existential conflict (e.g., increased relational needs vs fear of

losing autonomy) jointly with mental disorder symptoms [49]. This vulnerable group may experience existential distress symptoms subjectively different compared to patients with remitted or never diagnosed mental disorder. Symptoms may be perceived as more inevitable or terrifying, increasing the subjective difficulty to share them with significant others and leading to loneliness. For example, 'not feeling the person I once was' could refer to a distressing but, with support, manageable experience of functional loss in a patient with high dignity-related distress and no disorder. In a patient with major depression, the symptom could refer to a painful despair about being unworthy of others' love and care.

In clinical practice, existential distress symptoms are typically not part of standard diagnostic and screening. The existential distress concept has face value to clinicians as it captures distress responses characteristic of advanced cancer. That it covers an important type of despair beyond mental disorder criteria may explain its independent empirical association with suicidal ideation [50]. Its inclusion in standard screenings and education including psycho-oncological training programs may aid its recognition[37]. In addition, family caregivers can experience significant existential distress that requires attention [51].

Strengths, limitations and research needs

The present cross-sectional analyses cover the first wave of a one-year study. Further longitudinal analyses are required to evaluate the stability versus change of existential distress over time and enlighten the potential mutual relationships of existential distress and mental disorders. The 55% participation rate can be evaluated as relatively high given the severity of disease and comprehensiveness of assessments. Yet a subgroup of non-participants reported too much psychological or physical distress, which may have led to underestimation of prevalences. Potentially related to such burden, lung cancer, inpatients and lower-educated patients were underrepresented.

The sample was heterogeneous as patients were recruited across all disease phases from early after diagnosis of advanced cancer to terminal stages and from different clinical settings. Cross-sectionally, we found higher existential distress closer to diagnosis, but differences in relation to disease phase require longitudinal analysis. Although such analyses will be limited by small subgroups regarding tumor site and time since diagnosis, the mixed sample enables an evaluation of existential

distress in the population of advanced cancer patients who receive treatment at outpatient, inpatient and palliative care clinics. However, we are not able to generalize the findings to patients with hematological cancer, earlier stage cancer and survivors among which existential distress including fear of cancer recurrence can significantly limit quality of life [52].

Although we aimed for a comprehensive assessment, our conceptualization did not cover all potential aspects of existential distress. We applied a symptom-count based threshold for high existential distress and used a validated clinical interview to diagnose demoralization. Prevalence rates may however differ with the survey tool used and other measures are available [15]. There is to our knowledge currently no diagnostic interview and according diagnostic criteria available for death anxiety and dignity-related distress. Future studies should address the question of which severity threshold is the clinically most useful.

Conclusion

Existential distress, conceptualized as death anxiety, dignity-related distress and demoralization, is common at the end of life. One half of advanced cancer patients report clinically significant fears of own and loved ones' suffering, compromised sense of autonomy and identity, as well as feeling hopeless and unable to cope, thus requiring clinical attention to improve quality of life. Existential distress is distinct from mental disorders as defined by current classification systems. Most individuals with a mental disorder have comorbid existential distress requiring specialized psychotherapeutic and/or psychiatric treatment of both.

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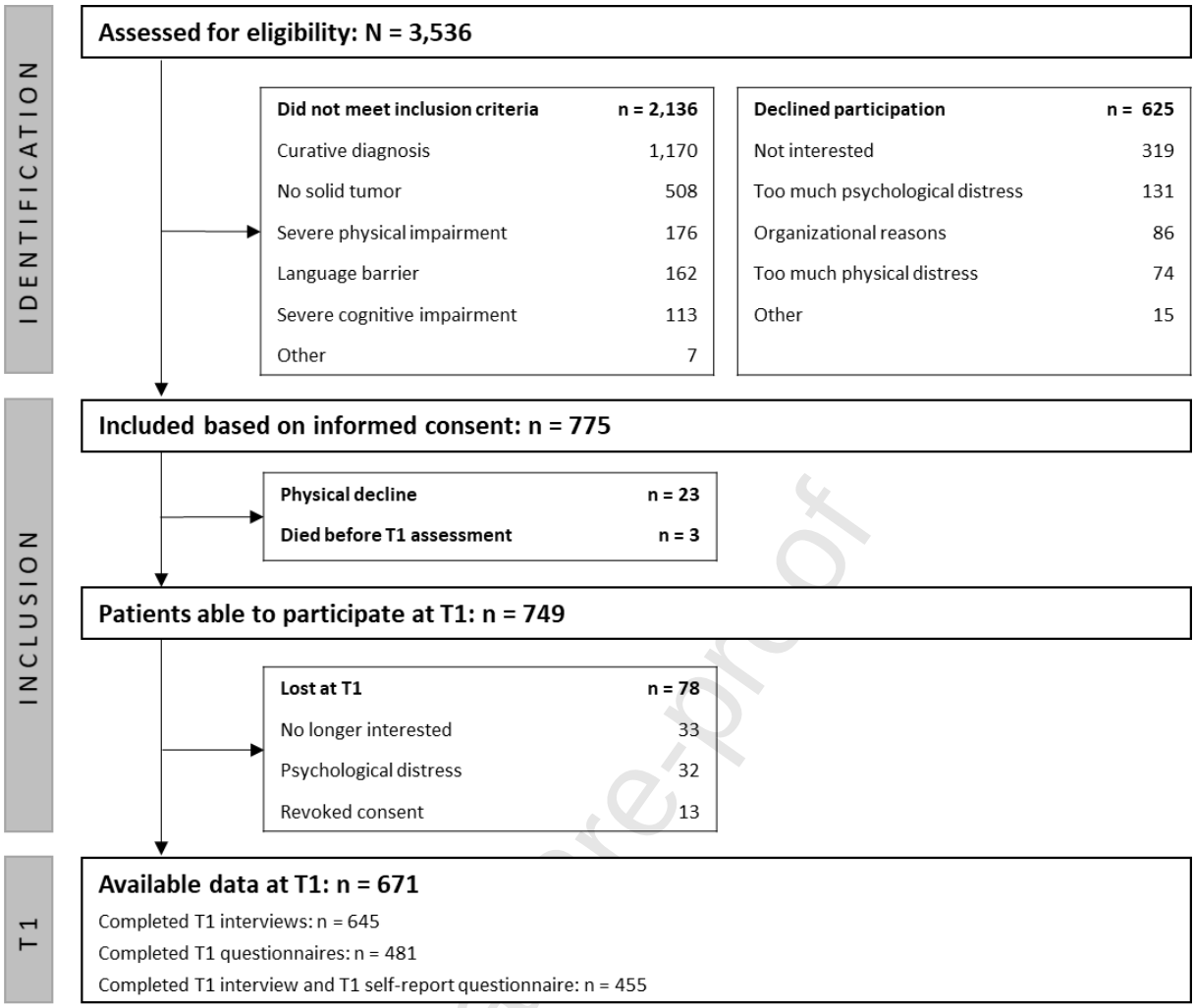

Figure 1: Participant flow

Table 1: Sample characteristics

Characteristic	N	%[a]
Age, median (IQR, range)	63 (17, 19-92)	
18-39	33	4.9
40-59	221	32.9
≥60	417	62.1
Sex		
Male	352	52.5
Female	319	47.5
Married/partnered	354	73.6
Education		
Up to middle school	198	41.2
High school	114	23.7
University degree	169	35.1
Self-identified as religious/spiritual	135	28.9
Primary tumor localization		
Lung	185	27.8
Prostate	90	13.5
Breast	72	10.8
Gynecologic	54	8.1
Liver/bile	49	7.4
Colon/rectum	43	6.5
Urinary tract	44	6.5
Pancreas	34	5.0
Stomach/esophagus	25	3.8
Brain	19	2.9
Head and neck	16	2.4
Sarcoma/mesothelioma	16	2.4
CUP/other	21	3.2
Treatment setting		
Outpatient	473	70.5
Inpatient	141	21.0
Inpatient: specialized palliative care	57	8.5
Time since first diagnosis (months), median (IQR, range)	22 (53, 0-508)	
< 6 months	177	26.5
6-12 months	85	12.7
>12 months	406	60.8
Active or prior anticancer treatments		
Chemotherapy	520	77.8
Surgery	388	58.1
Immune therapy	345	51.6
Radiotherapy	286	42.8
Hormone therapy	139	20.8
Targeted therapy	122	18.3
Line of therapy, median (IQR, range)	2 (2, 0-12)	
First line	324	48.5
Second line	166	24.9
Third line	69	10.3
Fourth and higher	109	16.3
Comorbidity	282	42.2

Current psychopharmacologic treatments[b]		
Antidepressant	76	11.4
Other	25	3.7

[a]valid percentages

[b]ongoing treatments (excluding temporary acute prescriptions)

Table 2: Prevalence of existential distress.

Existential distress	Prevalence (%)	95% CI (%)
At least one type of existential distress	46.4	41.7 to 51.1
Demoralization	12.5	9.6 to 15.9
Death anxiety	27.3	23.2 to 31.6
Dignity-related distress	38.7	34.2 to 43.3
Number of existential distress types		
One type of existential distress	22.6	18.9 to 26.8
Two types of existential distress	15.4	12.2 to 19.0
All three types of existential distress	8.4	6.0 to 11.3

Table 3. Logistic regression analysis of sociodemographic, tumor, and treatment-related predictors of existential distress.

	Multivariate model[a]			Bivariate model[b]		
Sociodemographic/medical predictor	**OR**	**95% CI**	**p**	**OR**	**95% CI**	**p**
Age group						
18-39	**4.7**	**1.4 to 15.0**	**.01**	**4.5**	**1.6 to 12.6**	**.004**
40-59	1.0	0.6 to 1.6	.87	1.2	0.8 to 1.8	.33
≥60	Reference	-	-	Reference	-	-
Gender						
Male	Reference	-	-	Reference	-	-
Female	1.1	0.7 to 2.0	.66	**1.6**	**1.1 to 2.3**	**.016**
Married/partnered						
No	Reference	-	-	Reference	-	-
Yes	0.9	0.6 to 1.4	.64	0.8	0.5 to 1.2	.21
Education						
Up to middle school	Reference	-	-	Reference	-	-
High school	1.4	0.8 to 2.4	.19	1.3	0.8 to 2.0	.33
University degree	0.9	0.6 to 1.5	.73	0.9	0.6 to 1.4	.60
Self-identified as religious/spiritual						
No	Reference			Reference		
Yes	0.9	0.6 to 1.4	.54	1.1	0.7 to 1.6	.77
Primary tumor localization[c]						
Lung	0.8	0.5 to 1.3	.36	0.8	0.5 to 1.1	.15
Prostate	**0.5**	**0.3 to 1.0**	**.04**	**0.5**	**0.3 to 0.7**	**.002**
Breast	1.2	0.7 to 2.2	.64	1.1	0.6 to 1.6	.83
Gynecologic	0.8	0.4 to 1.5	.42	0.9	0.5 to 1.5	.62
Liver/bile	1.5	0.8 to 3.0	.25	1.1	0.5 to 1.7	.90
Colon/rectum	0.8	0.4 to 1.8	.66	1.2	0.5 to 2.1	.82
Urinary tract	1.1	0.5 to 2.2	.83	0.9	0.6 to 2.0	.80
Pancreas	1.6	0.6 to 4.5	.35	2.2	0.9 to 5.2	.07
Other	Reference	-	-	Reference	-	-
Treatment setting						
Outpatient	Reference	-	-	Reference	-	-
Inpatient	1.4	0.8 to 2.5	.31	1.6	0.9 to 2.7	.07
Inpatient: specialized palliative care	**3.4**	**1.1 to 10.4**	**.03**	**3.9**	**1.4 to 3.9**	**.009**
Time since first diagnosis						
< 6 months	**1.9**	**1.1 to 3.4**	**.02**	**1.7**	**1.1 to 2.6**	**.02**
6-12 months	**2.4**	**1.3 to 4.5**	**.008**	**1.9**	**1.1 to 3.4**	**.02**
>12 months	Reference	-	-	Reference	-	-
Line of therapy						
First line	Reference	-	-	Reference	-	-
Second line	0.8	0.5 to 1.4	.40	0.7	0.4 to 1.0	.08
Third line	1.4	0.6 to 2.8	.43	0.8	0.4 to 1.5	.54
Fourth and higher	1.5	0.7 to 2.8	.28	0.9	0.5 to 1.6	.80
Comorbidity						
No	Reference	-	-	Reference	-	-
Yes	0.9	0.5 to 1.4	.53	0.9	0.6 to 1.3	.53

Note: Significant values are printed in bold text.
[a] All variables entered simultaneously
[b] Effect for each predictor tested separately
[c] Effects for each cancer type compared to average of total sample as reference group

Table 4: Co-occurrence of existential distress and mental disorders

	Existential Distress					
	No		Yes		Total	
	N	% of Total	N	% of Total	N	% of Total
Mental Disorder						
No	216	47.5	120	26.4	336	73.8
Yes	28	6.2	91	20.0	119	26.2
Total	244	53.6	210	46.4	455	100.0

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