

Is it the time to implement the routine use of distress thermometer among Egyptian patients with newly diagnosed cancer?

Nashwa Abd El- Aziz

South Egypt Cancer Institute

Salah Khallaf

South Egypt Cancer Institute

Waleed Abozaid

Mansura University

Ghada Elgohary

King Saud Medical City

Ola Abd El-Fattah

Assiut University Faculty of Medicine

Mai Elhawary

King Saud Medical City

Safaa Khaled

Assiut University Faculty of Medicine

Azza Abd El-Haffez

Assiut University Faculty of Medicine

Ehab Kamel

Assiut University Faculty of Medicine

Sherif Mohamed (✉ saawm220@gmail.com)

Assiut University <https://orcid.org/0000-0001-9437-4799>

Research article

Keywords: Cancer, Distress thermometer, Egypt, New, Screening

Posted Date: April 21st, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-22929/v1>

License:   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Version of Record: A version of this preprint was published on October 27th, 2020. See the published version at <https://doi.org/10.1186/s12885-020-07451-7>.

Abstract

Background

The distress thermometer (DT) is an effective tool for identifying distress among cancer patients worldwide. However, DT has not been studied in Egyptian patients. We aimed to study the prevalence of distress among Egyptian patients with different types of cancers using DT.

Methods

A total of 550 patients with newly diagnosed hematological and solid cancers who followed at 3 Oncology Centers in Egypt were enrolled. They completed a sociodemographic and clinical status questionnaire, the DT and the Problem List (PL) scale.

Results

At a DT cut off score of ≥ 4 , 46% of patients had significant distress, which was related to the tumor site and stage. The most frequent problems reported were treatment decision (64.4%), worry (47%), and fears (44.5%). Univariate analysis showed that participants who had significant distress described 26 out of 36 problems in the practical, family, emotional, spiritual/religious and physical areas. Multivariate analysis confirmed only advanced cancer stage, depression, fear, nervousness, sadness, worry, loss of interest in usual activity, appearance, fatigue, feeling swollen, fever, getting around, indigestion, nausea, pain, and sleep as independent factors associated with significant distress in cancer patients.

Conclusions

Almost half of Egyptian patients newly diagnosed with cancer suffered from significant distress. Patients who had significant distress described extra problems in the practical, family, emotional, spiritual and physical areas. We recommend the routine use of DT for screening Egyptian patients with cancer, as well as the involvement of the psycho-oncology service and palliative care for pain control, at the time of their initial diagnosis.

Background

Cancer is a leading cause of morbidity and mortality worldwide. In recent study from Egypt [1], age-standardized incidence rates per 100,000 for cancer were 175.9, 157.0, and 166.6 for males, females, and both sexes, respectively. Commonest sites for cancer were; liver (33.6%) and bladder (10.7%) among men, breast (32.0%) and liver (13.5%) among women, and liver (23.8%), breast (15.4%), and bladder (6.9%) for both sexes, respectively. By 2050, a 3-fold increase in incident cancer relative to 2013 was estimated [1]. Distress is defined by The National Comprehensive Cancer Network (NCCN) as an emotionally

unpleasant psychological (cognitive, behavioral, emotional), social, and/or spiritual experience that might interfere with a patient's ability to effectively cope with cancer, its physical symptoms, and its treatment [2]. Unfortunately, distress is quite common among cancer patients, with a reported overall level of clinically significant distress to be between 20–47% during the course of the disease [3]. Therefore, psychosocial care is increasingly acknowledged as an essential element of the clinical management of patients with cancer as it benefits the patients, their families/caregiver and the treating staff [4]. However, from the practical point of view, there is a considerable lack of experience with evaluating distress and using psychometric instruments among health professionals, which leads to a failure to identify distress in patients [5]. Surprisingly, it was reported that less than 10% of cancer health care professionals used a validated questionnaire to assess distress during consultations [5]. Moreover, busy health care professionals often miss the assessment of distress symptoms in their patients, and most patients are reluctant to describe their distress, which significantly reduces the diagnosis of distress symptoms in cancer patients [6].

Because a great number of distressed cancer patients remained unrecognized by medical staff, systematic screening of patients for distress is the effective way that allows timely support for those who are most in need [7]. Therefore, many international regulatory organizations and professional societies [3, 8, 9], have recommended the routine screening and management of distress as an integral aspect of whole-person cancer care in the same way that health-care teams monitor and respond to other vital signs.

The effectiveness of screening programs starts with the selection of a screening tool that is suitable in terms of brevity, precision, and acceptability [8]. Being a quick, easy and effective instrument to recognize, diagnose and provide prompt management of distress in cancer patients, the distress thermometer (DT) is one of the best-known screening tools in that regard. The DT has been investigated and validated as an effective screening tool for detecting distress among patients with various types of cancer, such as prostate carcinoma [10], lung cancer [11], and breast cancer. Moreover, the original NCCN English version [13] has been successfully translated into several languages, including Dutch [14], Japanese [15], Turkish [16], Italian, Spanish and Portuguese [17], and recently its Arabic version has been validated in Saudi cancer patients [18].

To the best of our knowledge, the DT has not been studied in Egyptian patients with cancer. Therefore, the aims of this study were to study the prevalence of emotional distress among Egyptian patients with different types of cancers at their initial diagnosis, to evaluate the value of implementing the DT as a screening tool in those patients, and to identify the most significant factors of the DT problem list (PL) that account for such distress. Identification of such distress and its subsequent management may improve the patients' outcomes and quality of life.

Materials And Methods

Study Population

An ethical approval was obtained from The Institutional review Committee of South Egypt Cancer Institute (No: 483). Egyptian cancer patients who have been newly diagnosed with different types of hematological malignancies and/or solid cancers and consulted one of the three Oncology Centers (South Egypt Cancer Institute (SECI), Assiut University Hospital (AUH), and Mansura University Hospital (MUH) were enrolled into the study. Also, the study enrolled some patients who had the diagnosis of lung cancer at the Department of Chest Diseases, AUH and referred to the Oncology Department of either AUH or SECI. Eligible patients were adults (≥ 18 years old) with the Egyptian Nationality, of both genders, proved to have cancer (either hematological or solid malignancy), with an adequate command of speaking and reading Arabic language, with an Eastern Cooperative Oncology Group (ECOG) performance status < 3 , and gave an informed consent. Patients who had history of, or been treated for psychiatric illness were excluded.

Socio-demographic data and medical status

The patients' socio-demographic and clinical features were retrieved from the patients' medical records. A standard socio-demographic data were collected including age, marital status, education level, employment status, performance status, type and stage of cancer as defined by the TNM classification system, and the type of treatment will be received.

Distress Thermometer (DT)

The recently validated Arabic version of DT [18] has been used for screening the patients for distress with a cut off score of ≥ 4 for significant distress. The study objectives and procedure were fully explained to the eligible patients.

Patients were asked to rate their distress in the past week on an 11-point visual analog scale ranging from 0 (no distress) to 10 (extreme distress). Patients were then asked to fill in the Problem List (PL) that accompanies the visual image of the DT to check whether or not (yes/no) they have any of the problems listed during the previous 7 days. This PL consisted of 36 problems of five grouped categories; spiritual/religious concerns, practical problems, family problems, emotional problems, and physical problems. Correlation between the PL and DT was carried out to identify the nature of the distress and related factors.

Statistical Analysis

The Statistical Package for Social Science; SPSS, version 22 (SPSS Inc., Chicago, IL, USA) has been used for data analysis. The mean score, the standard deviation, the median score and the frequency distribution of the DT have been explored using descriptive statistical analysis. All P-values were two-tailed. A P-value < 0.05 was considered statistically significant. Univariate and multivariate analyses were conducted using the Chi-square test to explore the association between the DT cut off scores of 4 [18] and the demographic and clinical variables and the individual items in the PL.

Results

Sociodemographic and clinical characteristics

A total of 550 patients participated in the current study. The mean age was 51.3 (range 18–79) years. Females constituted 60% of the participants. Three hundred thirty-three (79%) patients scored 2 or less on the ECOG performance status. Different types of solid and hematological malignancies were included; the majority were solid tumors (465/550, 85%) versus 85/550, 15% hematological malignancies. Among the solid tumors, the most common types were breast cancer (32.7%), gastrointestinal cancers (23%), and genitourinary (13%). Despite that all patients were newly diagnosed with cancer, 56% of them had stage IV at presentation. Forty-one percent of patients had associated medical comorbidities. Table 1. Details the demographic data of the study cohorts.

Table 1

Clinical and sociodemographic characteristics of the study subjects (n=550) and their association with the DT score ≥ 4

Characteristic	Overall N=550	(%DT off ≥ 4)	(%DT off < 4)	P-value
Gender				0.102
Male	224 (40)	82	142	
Female	326 (60)	172	154	
Marital Status				0.840
Single	66 (12)	30	36	
Married	393(72)	178	215	
Divorced	16 (3)	8	8	
Widow	75 (13)	38	37	
Educational level				0.043
Illiterate	38 (7)	25	13	
Primary school	234 (42)	98	136	
Intermediate school	65 (12)	24	41	
Secondary school	98 (18)	47	51	
Bachelor's degree	103 (19)	55	48	
Master's degree	11 (2)	5	6	
PhD	1(0)	0	1	
Occupation				0.864
Student	30 (5)	14	16	
No job	371 (68)	174	197	
Job	149 (27)	66	83	
Monthly Income(EP)				0.430
< 5000	305 (55)	147	158	
5000-10000	133 (24)	63	70	
10000-15000	75 (14)	30	45	
>15000	37 (7)	14	23	
Health Insurance				0.226
Yes	108 (20)	48	33	
No	442 (80)	206	263	
Chronic disease				0.045
Present	224 (41)	110	134	
Absent	326 (59)	144	162	
Tumour Site				0.021
Head and Neck	17 (3)	10	7	
Breast	180 (33)	93	87	
Lung	41(8)	24	17	
GIT	127 (23)	56	71	
Genitourinary	71 (13)	29	42	
Musculoskeletal	29 (5)	6	23	
Haematological	85 (15)	36	49	
Type of malignancy				0.000
Hematological	85 (15)	36	49	
Solid tumors	465(85)	218	247	
Stage				0.000
Stage 1	29 (5)	6	23	
Stage II	108(19)	20	88	

Stage III	109 (20)	24	85
Stage IV	304 (56)	204	100

* DT; distress thermometer, EP; Egyptian pound, GIT; gastrointestinales

Data from distress thermometer and problem list analysis

Two hundred fifty-four (46.2%) patients had significant distress (DT cut off score ≥ 4). The patients' average DT score was 3.7. There were significant differences between patients with significant distress (DT cut off score ≥ 4) and those without significant one; with regards to the presence of chronic disease ($p = 0.045$), tumor type ($p = 0.000$), tumor site ($p = 0.021$), and stage of the disease ($p = 0.000$). Table 1 shows these differences. The most frequent problems reported on the practical domain of the PL were, in descending order, treatment decision (64.4%), worry (47%), fears (44.5%), and pain (42.2%). Table 2 details the prevalence of the most encountered PL items among the study group.

Table 2
The most frequent problem list items among the studied patients (n= 550)

Problems List	No. of patients	%
Treatment decision	354	64.4
Worry	258	47.0
Fears	245	44.5
Pain	232	42.2
Dealing with partner	193	35.1
Sleep	178	32.4
Sadness	168	30.5
Nausea	156	28.4
Eating	156	28.4
Depression	147	26.7
Constipation	141	25.6
Child care	133	24.2
Loss of interest	129	23.4
Sexual	125	22.7
Indigestion	124	22.5

Association between significant DT score and the PL items

By the univariate analysis, a DT score of 4 or more was found to have a statistically significant correlation with most of the PL items including; insurance, family health issue, depression, fear, nervousness, sadness, worry, loss of interest in usual activity, religious concerns, appearance, bathing and dressing, breathing, diarrhea, eating, fatigue, feeling swollen, fever, getting around, indigestion, mouth sores, nausea, pain, sexual problems, substance abuse, and sleep. The multivariate analysis confirmed only advanced cancer stage, depression, fear, nervousness, sadness, worry, loss of interest in usual activity, appearance, fatigue, feeling swollen, fever, getting around, indigestion, nausea, pain, and sleep as independent factors associated with significant distress in cancer patients. Table 3 details these associations.

Table 3

The association between the Distress Thermometer (DT) score ≥ 4 and the Problems List items of 550 cancer patients; Univariate and multivariate analysis

Problem list	DT cut off	DT cut ≥ 4	Univariate analysis P-value	Multivariate analysis P-value
Child care			0.486	-
Present	65	68		
Absent	189	228		
Housing			0.184	-
Present	64	60		
Absent	190	236		
Insurance			0.011	0.285
Present	48	33		
Absent	206	263		
Transportation			0.750	-
Present	53	58		
Absent	201	238		
Work and school			0.300	-
Present	20	16		
Absent	234	280		
Treatment decisions			0.657	-
Present	166	188		
Absent	88	108		
Dealing with children			0.684	-
Present	62	65		
Absent	192	231		
Dealing with Partner			0.074	-
Present	100	94		
Absent	154	202		
Ability to have children			0.292	-
Present	50	42		
Absent	204	254		
Family Health Issue			0.017	0.380
Present	44	30		
Absent	210	266		
Depression			0.000	0.000
Present	133	14		
Absent	121	282		
Fear			0.000	0.000
Present	179	66		
Absent	75	230		
Nervousness			0.000	0.000
Present	85	169		
Absent	169	255		
Sadness			0.000	0.000
Present	137	31		
Absent	117	265		
Worry			0.000	0.000
Present	180	78		
Absent	74	218		

Loss of interest in usual activity			0.000	0.002
Present	104	25		
Absent	150	271		
Religious			0.000	0.117
Present	21	3		
Absent	233	293		
Appearance			0.000	0.004
Present	67	33		
Absent	187	263		
Bathing and Dressing			0.001	0.138
Present	44	22		
Absent	210	274		
Breathing			0.001	0.063
Present	62	39		
Absent	192	257		
Change in urination			0.905	-
Present	39	44		
Absent	215	252		
Constipation			0.281	-
Present	71	70		
Absent	183	226		
Diarrhea			0.007	0.292
Present	48	31		
Absent	206	264		
Eating			0.006	0.076
Present	87	69		
Absent	167	227		
Fatigue			0.000	0.000
Present	164	105		
Absent	90	191		
Feeling Swollen			0.000	0.000
Present	77	36		
Absent	177	260		
Fever			0.000	0.026
Present	50	21		
Absent	204	275		
Getting Around			0.000	0.006
Present	64	29		
Absent	190	267		
Indigestion			0.001	0.025
Present	73	51		
Absent	181	245		
Memory and Concentration			0.058	-
Present	51	45		
Absent	203	251		
Mouth Sores			0.003	0.265
Present	45	27		
Absent	209	269		
Nausea			0.000	0.000
Present	100	56		

Absent	154	240		
Dry Nose & Congestion			0.207	-
Present	40	32		
Absent	214	264		
Pain			0.000	0.000
Present	144	88		
Absent	110	208		
Sexual			0.004	0.102
Present	72	53		
Absent	182	243		
Itching and Dry Skin			0.347	-
Present	44	42		
Absent	210	253		
Tingling sensation in hands and feet			0.147	-
Present	50	46		
Absent	204	250		
Substance Abuse			0.000	0.080
Present	31	4		
Absent	223	292		
Sleep			0.000	0.000
Present	129	49		
Absent	125	247		

Discussion

To the best of our knowledge, this is the first study that evaluates the problem of emotional distress among a large number of newly diagnosed patients with different types of cancer, attending 3 University cancer centers in Egypt.

Using the Arabic version of DT [18] had identified that 46% of our cancer patients had significant distress, which was significantly related to the tumor site, advanced stage of the disease, and to many items of the problem list. This is the second study that utilizes the Arabic version of the DT, after that of Alosaimi, *et al* [18], in screening a large number of patients with different types of cancer for emotional distress. DT is a single-item, self-report measure of distress that provides a brief, visual analogue, non-invasive, valid and acceptable alternative to longer and more burdensome psychometric instruments. In addition, its associated PL can be used to provide words for psychological problems with non-stigmatizing connotations to identify possible contributing factors [3, 18]. We think that, despite the apparent simplicity of that tool, it covers most-if not all- problems might be faced by any study population (i.e. populations with different racial, religious, social and financial aspects), and world-wide. So, it is not surprising that DT has been successfully translated from English into several languages [14–18].

Almost half of our cohorts had a significant distress. This is in agreement with the world-wide reported prevalence rates of 20–52% of cancer patients [2, 9, 19] for distress among cancer patients. Particularly, our figures are very similar to that (45.89%) reported by Hahn, *et al* [20].

Our study revealed that there were significant differences between patients with significant distress and those without; with regards to the presence of chronic disease, tumor site, and stage of the disease. We enrolled a large number of patients and with different types and sites of cancers, which may explain these significant associations. Our results contradict those of previous reports that were incapable to find significant links between the DT and socio-demographic and clinical characteristics [3, 13, 15, 18]. Differences in the study populations, numbers, and types of cancer might explain these different findings. The most frequent problems reported on the practical domain of the PL were, treatment decision (64.4%), worry (47%), fears (44.5%), and pain (42.2%).

These encountered problems are similar to those found by Alosaimi and coworkers [18] and could be explained by the similarities between the cultural, emotional, spiritual, and physical demographics in the two study Arabian populations. The relationship between experienced distress and dissatisfaction with the treatment decision is probably bidirectional [21]. To alleviate treatment decision-related distress, it might be helpful to provide with patients with prognostic information, elicit decision-making preferences, and appreciate their fears and goals [22].

The results of this study had highlighted the importance of early screening cancer patients (at their initial diagnosis with cancer) for distress. Univariate analysis had revealed that our participants who scored 4 or more on the DT described extra problems in the practical, family, emotional, spiritual/religious and physical areas (26 out of 36 problems) than patients who scored below this cut off score. Although degrees vary, this finding suggests that a wide range of problems contributes to distress in cancer patients [23], which is also consistent with many similar studies performed worldwide, and among various cancer populations [11–14, 18, 23].

Despite that multivariate analysis had identified the presence of only 16 out of 36 problems, as independent factors associated with significant distress in cancer patients, still this is considered a large number of problems for a cancer patient to challenge. These findings are very similar to those observed by Alosaimi, *et al* [18], while they are quite different from those reported by McFarland, *et al* [25] who stated that only three factors were significantly associated with distress (breathing problem, eating, and nausea). This agreement with Alosaimi, *et al* [18] is attributed to the fact that the 2 studies recruited Arabian population with nearly similar cultural, spiritual and emotional factors. While, the contrary with McFarland *et al* [25] could be explained by the differences in patients' numbers and cancer type between the two studies. We include a wide range of malignancies, while they included only patients with breast cancer.

Practically speaking, barriers to screening for distress do exist and they should be put into consideration upon implementing a screening program for distress [29]. For instance, patients may have trouble understanding what the word "distress" means [30]. Patient barriers to screening include cultural differences as well as literacy [31]. Unfortunately, 49% of our study cohorts had low education levels (illiteracy and primary school education). Another barrier occurs when referring distressed patients for psychosocial services. Studies have also shown that patients who score high on the DT may not

necessarily want help. Conversely, studies have shown that when patients were screened and did not receive any referrals or assistance, their levels of distress increased [30].

Overall, findings of the current study confirm the importance of “routine” screening of cancer patients for emotional distress. Also, they support the importance of recognition of distress among cancer patients that comes from the possibility of overcoming its hazardous sequelae. These sequelae are noncompliance with cancer treatment, difficulty in taking a decision of treatment, frequent unneeded medical visits to caregivers, more stress on medical team [4, 9] and more hospitalization [26]. Moreover, it has a bad impact on survival in some studies [27, 28]. It is well known that screening programs improve patient outcomes only when linked to an effective system of assessment and treatment. Therefore, cancer centers should implement DT screening only after developing a plan for the timely evaluation of distress, reviewing its results and managing patients whose scores suggest clinically significant distress, including making appropriate referrals based on the problem areas specified on the PL [8].

Being the first multicenter study with large number of patients of different types of cancer does not guarantee that it has no limitations. Possible limitations include possible bias from including many types of cancers and possible convenience sampling which may affect generalizability of the study findings to all cancer patients in Egypt.

Conclusion

The study findings conclude that almost half of Egyptian patients newly diagnosed with cancer are suffering from significant distress. This distress was significantly related to the tumor site and stage. Patients who scored 4 or more on the DT described extra problems in the practical, family, emotional, spiritual and physical areas than patients who scored below this cut-off score. We recommend the routine use of DT for screening Egyptian patients with cancer, as well as the involvement of the psycho-oncology service and palliative care for pain control, at the time of initial diagnosis. More multi-center studies are warranted.

Abbreviations

DT; distress thermometer, **ECOG**; Eastern Cooperative Oncology Group, **NCCN**; National Comprehensive Cancer Network, **PL**; problem list, **TNM**; Tumor-node-metastasis

Declarations

Ethics approval and consent to participate

The study was approved by the Ethical Committee of AUH and SECI. Written informed consent was provided by each subject before participation.

Consent for publication

Not applicable.

Availability of data and material

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors have no competing interests

Conflict of interest:

The authors have no conflicts of interest

Funding:

The authors did not receive any fund for this study

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Authors' contributions

All authors have provided approval of the manuscript to be published. N.A. and S.M. contributed to the draft of the submitted article, revised it critically for important content, and made substantial contributions to conception and design, as well as data acquisition, analysis, and interpretation; S. K., W.A. G.E, O.A., M.A. and S.K. contributed to the draft of the submitted article and made substantial contributions to acquisition, and data analysis, A.A. and E.K. contributed to the draft of the submitted article and made substantial contributions to acquisition, analysis, and interpretation of physiologic data. N.A. S.K. and S.M. wrote the manuscript.

Acknowledgements

Not applicable.

References

1. 10.1155/2014/437971
Ibrahim AS, Khaled HM, Mikhail NNH, Baraka H, Kamel H. Cancer Incidence in Egypt: Results of the National Population-Based Cancer Registry Program. *J Cancer Epidemiol.* 2014; 2014: 437971. doi: .
2. Riba MB, Donovan KA, Andersen B. Distress Management. Version 3.2019, NCCN Clinical Practice Guidelines in Oncology. *J Natl Compr Canc Netw.* 2019;17(10):1229–49. doi:.
3. Holland JC, Anderson B, Breibart WS, Buchmann LO, Compas B, Deshields TL, et al. Distress management: Clinical practice guidelines in oncology. *J Natl Compr Cancer Netw NCCN.* Harborside Press, LLC; 2013; 11: 190–209. [https:// doi.org /10.6004 /JNCCN.2013 .0027](https://doi.org/10.6004/JNCCN.2013.0027).
4. Bultz BD, Holland JC. Emotional distress in patients with cancer: the sixth vital sign. *Community Oncol.* 2006;3:311–4.

5. 10.1002/pon.1228
Mitchell AJ, Kaar S, Coggan C, Herdman J. Acceptability of common screening methods used to detect distress and related mood disorders? preferences of cancer specialists and non-specialists. *Psychooncology* 2008; 17: 226–236. PMID: 17575565.
6. 10.1054/bjoc.2000.1545
Soillner W, DeVries A, Steixner E, Lukas P, Sprinzl G, Rumpold G, et al. How successful are oncologists in identifying patient distress, perceived social support, and need for psychosocial counselling? *Br J Cancer* 2001; 84: 179–85. PMID: 11161373.
7. Keller M, Sommerfeldt S, Fischer C, Knight L, Riesbeck M, Løwe B, et al. Recognition of distress and psychiatric morbidity in cancer patients: a multi-method approach. *Ann Oncol.* 2004;15:1243–9. [https:// doi. Org /10. 1093/ annonc/mdh318](https://doi.org/10.1093/annonc/mdh318) PMID: 15277265.
8. /10.1002/cncr.28750
Pirl WF, Fann JR, Greer JA, Braun I, Deshields T, Fulcher C, et al. Recommendations for the implementation of distress screening programs in cancer centers: Report from the American Psychosocial Oncology Society (APOS), Association of Oncology Social Work (AOSW), and Oncology Nursing Society (ONS) joint task force [Internet]. *Cancer* 2014. pp. 2946–2954. [https: //doi. Org .](https://doi.org/) PMID: 24798107.
9. [https:// 10.1200/JCO.2011.39.5509](https://doi.org/10.1200/JCO.2011.39.5509)
Carlson LE, Waller A, Mitchell AJ. Screening for distress and unmet needs in patients with cancer: Review and recommendations [Internet]. *Journal of Clinical Oncology.* 2012. pp. 1160–1177. PMID: 22412146.
10. Roth AJ, Kornblith AB, Batel-Copel L, Peabody E, Scher HI, Holland JC. Rapid screening for psychologic distress in men with prostate carcinoma: a pilot study. *Cancer.* 1998; 82: 1904–8. Available: . gov/ pubmed/9587123 PMID: 9587123.
11. [https:// 10.1016/j.lungcan.2006.10.001](https://doi.org/10.1016/j.lungcan.2006.10.001)
Graves KD, Arnold SM, Love CL, Kirsh KL, Moore PG, Passik SD. Distress screening in a multidisciplinary lung cancer clinic: Prevalence and predictors of clinically significant distress. *Lung Cancer* 2007; 55: 215–224. . PMID: 17084483.
12. 10.1002/ cncr.22335
Hegel MT, Moore CP, Collins ED, Kearing S, Gillock KL, Riggs RL, et al. Distress, psychiatric syndromes, and impairment of function in women with newly diagnosed breast cancer. *Cancer* 2006; 107: 2924–2931. PMID: 17103381.
13. Screening for distress
Hoffman B, Zevon M, D'Arrigo M, Cecchini T. Screening for distress.
14. in cancer patients: the NCCN rapid-screening measure. *Psychooncology.*
15. 2004.;13: 792–799.
16. 10.1002/pon.1451

- van Dooren S, Duivenvoorden HJ, Passchier J, Bannink M, Tan MBM, Oldenmenger WH, *et al.* The Distress Thermometer assessed in women at risk of developing hereditary breast cancer. *Psychooncology* 2009; 18: 1080–1087. PMID: 19189274.
17. <https://doi.org/10.1002/cncr.11358>
Akizuki N, Akechi T, Nakanishi T, Yoshikawa E, Okamura M, Nakano T, *et al.* Development of a brief screening interview for adjustment disorders and major depression in patients with cancer. *Cancer* 2003; 97: 2605–2613. doi. org /10.1002/cncr.11358 PMID: 12733160.
18. [10.1002/pon.1059](https://doi.org/10.1002/pon.1059)
Özalp E, Cankurtaran ES, Soygu H, Özdemir Geyik P, Jacobsen PB. Screening for psychological distress in Turkish cancer patients. *Psychooncology* 2007; 16: 304–311. PMID: 16909427.
19. Gil F, Grassi L, Travado L, Tomamichel M, Gonzalez JRR, Southern European Psycho-Oncology Study Group. Use of distress and depression thermometers to measure psychosocial morbidity among southern European cancer patients. *Support Care Cancer*. 2005;13:600–6. .
20. [s00520-005-0780-0](https://doi.org/10.1371/journal.pone.0207364) PMID: 15761700.
21. Alosaimi FD, Abdel-Aziz N, Alsaleh K, Al Sheikh R, Al Sheikh R, Abdel-Warith A. Validity and feasibility of the Arabic version of distress thermometer for Saudi cancer patients. *PLoS ONE* 2018; 13(11): e0207364. <https://doi.org/10.1371/journal.pone.0207364>.
22. [1371/journal.pone.0207364](https://doi.org/10.1371/journal.pone.0207364).
23. Mehnert A, Hartung TJ, Friedrich M, *et al.* One in two cancer patients is significantly distressed: prevalence and indicators of distress. *Psychooncology*. 2018;27:75–82.
24. Hahn C, Joo SH, Chae JH, Lee CU, Kim TS. Feasibility of Psychosocial Distress Screening and Management Program for Hospitalized Cancer Patients. *Psychiatry Investig*. 2017;14(6):734–45.
25. <https://doi.org/10.1111/ijn.12243>
Budden LM, Hayes BA, Buettner PG. Women’s decision satisfaction and psychological distress following early breast cancer treatment: A treatment decision support role for nurses. *Int J Nurs Pract* 2014; 20: 8–16. doi. org/ 10.1111/ijn.12243 PMID: 24580970.
26. [10.1001/jamainternmed.2014.5271](https://doi.org/10.1001/jamainternmed.2014.5271)
Bernacki RE, Block SD. Communication About Serious Illness Care Goals. *JAMA Intern Med*. American Medical Association; 2014; 174: 1994. <https://doi.org/10.1001/jamainternmed.2014.5271> PMID: 25330167.
27. <https://doi.org/10.1002/pon.1275>
Shim E-J, Shin Y-W, Jeon HJ, Hahm B-J. Distress and its correlates in Korean cancer patients: pilot use of the distress thermometer and the problem list. *Psychooncology* 2008; 17: 548–555. PMID: 17957764.
28. [10.1002/cncr.20940](https://doi.org/10.1002/cncr.20940)
Jacobsen PB, Donovan KA, Trask PC, Fleishman SB, Zabora J, Baker F, *et al.* Screening for psychologic distress in ambulatory cancer patients. *Cancer*. 2005; 103: 1494–1502. PMID: 15726544.

29. McFarland DC, Jutagir DR, Miller A, Nelson C. Physical problem list accompanying the distress thermometer: Its associations with psychological symptoms and survival in patients with metastatic lung cancer. *Psycho-Oncology*. 2020 Feb. DOI:.
30. Nipp RD, El-Jawahri A, Moran SM, et al. The relationship between physical and psychological symptoms and health care utilization in hospitalized patients with advanced cancer. *Cancer*. 2017;123:4720–7.
31. Kissane D. Beyond the psychotherapy and survival debate: the challenge of social disparity, depression and treatment adherence in psychosocial cancer care. *Psychooncology*. 2009;18:1–5.
32. Pirl WF, Greer JA, Traeger L, et al. Depression and survival in metastatic non-small-cell lung cancer: effects of early palliative care. *J Clin Oncol*. 2012;30:1310–5.
33. Ownby KK. Use of the Distress Thermometer in Clinical Practice. *J Adv Pract Oncol*. 2019;10(2):175–9. .
34. Mitchell A. Screening for cancer-related distress: When is implementation successful and when is it unsuccessful? *Acta Oncologia*. 2013;52(2):216–24. .
35. Lo SB, Ianniello L, Sharma M, Sarnacki D, Finn KT. Experience implementing distress screening using the National Comprehensive Cancer Network distress thermometer at an urban safety-net hospital. *Psycho-Oncology* 2016;25(9):1113–5. .