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The Distress Thermometer as an ultra-short screening tool: A first validation study for mixed-cancer outpatients in Singapore

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Abstract

Introduction: Research has shown that single-item tools, like the Distress Thermometer (DT), are comparable to longer ones, like the Hospital Anxiety and Depression Scale (HADS). In this study, we tested the validity of the DT in a population of Singapore cancer outpatients, and determined the cut-off scores on the DT for clinically relevant distress and an impaired quality of life (QOL). We also documented the prevalence of anxiety, depression, and QOL impairments in this population.
Methods: One hundred and five patients (*Mdn* age = 51–60 years, 64% female, and 71% Chinese) diagnosed with various cancers participated in this study. They completed a standard socio-demographic form, the DT and the Problem List, the HADS, and the EuroQOL Quality of Life Scale (EQ-5D).
Results: Almost a third of patients had clinically significant emotional distress, with 15%–16% having probable levels of anxiety and depression. Almost half (41%–55%) had an impaired QOL compared to Singapore population norms. Receiver operating characteristic curve analyses identified an area under the curve of 0.89 (*SE* = 0.36, 95% CI [0.82, 0.96], $p < .001$) when compared to the HADS cut-off score of 15. A cut-off score of 5 on the DT had the best sensitivity (0.88) and specificity (0.81). Participants above the DT cut-off score of 5 reported significantly more emotional problems (worry, nervousness, depression, sadness), insurance/finance-related problems, and sleep problems. They also scored significantly lower on EQ-5D, with more QOL impairments in the domains of carrying out their usual activities and anxiety/depression.
Conclusion: Levels of distress, anxiety, depression, and QOL impairments are high in this population. The DT was found to be a valid tool for distress screening in the Singapore cancer population, with a recommended cut-off score of 5.

1. Introduction

In Singapore, a small island state with a population of 5.3 million, one in three deaths is due to cancer; every day, 16 people die from [1], and 31 are diagnosed with [2], cancer. Undeniably, the diagnosis and treatment of cancer are life-changing events; patients with cancer suffer high levels of distress, experience elevated levels of anxiety and depression [3], and have a lowered quality of life (QOL). Medical teams very often focus on treating the illness, and in the process, may overlook patients' emotional and psychosocial needs.

1.1. Emotional Distress and Quality of Life in Cancer Patients

To the best of our knowledge, there is no published literature that documents the levels of anxiety, distress, and QOL in Singapore cancer patients; however, elsewhere in Asia, levels of distress in cancer patients are high. A study of Indonesian women with breast cancer reported a 52% prevalence rate for distress [4]. Studies in Japan found that 69% of breast cancer patients had significant emotional distress [5], and at least 37% of patients undergoing chemotherapy reported moderate or severe distress [6,7]. In

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Korea, at least a third of cancer patients were found to suffer from psychological distress [8,9], and in Malaysia, a fifth [10].

The high levels of distress in patients diagnosed with cancer are worrying, given that distress is commonly associated with both depression and anxiety [3], and poorer QOL [4]. In Taiwan, a study of cancer patients found that 66% of participants had elevated levels of distress and 20%–23% of these were psychiatrically diagnosed as suffering from anxiety and depression [11]. Studies have also shown that level of distress is associated with lowered QOL in Chinese patients with advanced cancer [12], and in Japanese men with prostate cancer [13]. Although one longitudinal study in Taiwan did find that QOL levels of colorectal cancer patients eventually returned to normal levels with time after surgery [14], another found that the supportive care needs of women with newly diagnosed breast cancer were significantly predicted, amongst others, by distress and anxiety [15].

Because of the high levels of distress amongst cancer patients and its relationship to anxiety, depression, and QOL, screening for distress is recommended as best practice in cancer care—it should be monitored, documented, and treated promptly at all stages of cancer, and in all settings [16]. Screening for distress allows healthcare professionals to identify patients that might require assistance with their emotional needs; indeed, early initiation of psychiatric treatment in cancer populations has proven helpful [17].

In Singapore, however, screening for emotional distress is not routine practice in high-volume ambulatory oncology clinics. This is primarily due to the inconvenience of administering a lengthy questionnaire to every patient in a clinic with a high patient load. Consultations primarily focus on physical care, with insufficient attention to emotional and psychological issues that attain clinical significance. It is, thus, of prime importance to establish an efficient method to screen and identify distress, anxiety, and depression amongst local cancer patients; the present study seeks to address this imperative.

1.2. Screening for Distress in Cancer Patients

One of the more commonly used measures to screen for emotional distress in patients with a medical illness is the Hospital Anxiety and Depression Scale (HADS) [18]. The HADS is a 14-item self-report questionnaire that assesses symptoms (in the past week) of anxiety and depression in patients with medical illnesses. While the HADS is by no means a diagnostic tool, medical professionals in Asia, and elsewhere, ubiquitously employ it as a screening tool in various patient populations. The HADS takes approximately 10 min for patients to complete and for administrators to score.

The National Comprehensive Cancer Network (NCCN) identified the Distress Thermometer (DT) as an effective single-item tool for patients to rate their distress on a visual analogue scale [19]. The DT is very brief and easy to administer, using "distress" to encompass psychological problems. A Problem List (PL) accompanies the DT, examining the specific aspects of distress by asking patients to identify any of 36 issues that have been a problem for them in the past week. The DT has been used as a screening tool for detecting distress amongst various cancers worldwide with a cut-off score of ≥ 4 [20]; a recent meta-analysis has shown that single-item ("ultra-short") tools, like the Distress Thermometer (DT), not only are more efficient, but also have comparable prowess to longer and more burdensome ones, like the HADS [21].

In recent years, some research has been done to examine the efficacy of the DT as a screening tool against both the HADS and psychiatric diagnoses (most research on this topic has been done outside of Asia [21]). Indeed, the DT has been found to be useful in Korea, Taiwan, and Japan with a suggested optimal cut-off score of ≥ 4 for significant distress [9,11,22], similar to the cut-off suggested by the NCCN [16], and in Indonesia and Malaysia, with a suggested optimal cut-off score of ≥ 5 [4,10].

1.3. Purpose of the Present Study

However, no published literature exists documenting the levels of distress, anxiety, depression, and QOL impairments, as well as the efficacy of the DT as a screening tool for HADS, in the Singapore cancer population; furthermore, we have not yet come across literature examining the use of the DT as a screening tool for QOL impairments. In light of this paucity of research, the purpose of this study is therefore twofold:

1. To document the levels of anxiety, depression, and QOL impairments in this population.
2. To examine the validity of the DT in Singapore as a screening tool in measuring clinically relevant emotional distress and impairments in QOL.

2. Methods

2.1. Participants

One hundred and five patients diagnosed with various cancers participated in this study. Table 1 details the demographic and clinical characteristics of our sample. The median, and largest, age group of our participants was 51–60 years old (33%, $n = 35$); ages ranged from 21 to beyond 81 years. The majority of our sample was females (64%, $n = 67$) of Chinese ethnicity (71%, $n = 74$). Most had secondary-level (between 7 and 10 years of) education or better (66%, $n = 60$), and almost all lived with family, friends, or tenants (95%, $n = 98$). Close to two-fifths of our sample suffered from breast cancer (38%, $n = 40$), and another one-fifth suffered from colorectal cancers (20%, $n = 21$). Of those undergoing treatment, half were currently receiving chemotherapy (52%, $n = 22$), 12% radiotherapy