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SENSITIVITY AND SPECIFICITY OF DISTRESS THERMOMETER FOR DETECTING DEPRESSION AMONG PATIENTS DIAGNOSED WITH MAJOR DEPRESSIVE DISORDER

Psychiatry

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ABSTRACT

Introduction: By 2030, depression is anticipated to be a major contributor to the global illness burden. The most prevalent psychiatric condition documented in community settings in India is depression and remains unidentified in primary care. Over the previous few decades, an increase in the prevalence of depression has been noted and therefore it is crucial to identify those who are depressed and to intervene as soon as feasible. **Objectives:** The current study primarily aims to estimate the sensitivity and specificity of the distress thermometer for detecting depression among patients diagnosed with major depressive disorder. The study also attempts to find out the correlation between the distress thermometer score and PHQ-9 score. **Methods:** A tertiary centre based cross sectional study was carried out among 600 adult persons. After obtaining Informed Consent, Sociodemographic and clinical details were recorded using semi structured questionnaire. Each patient's level of distress was assessed using Distress Thermometer questionnaire and the level of depressive symptoms was assessed using PHQ-9 questionnaire. Spearman correlation coefficient was used to find the correlation between the two scores. **Results:** A cut-off score of 4 represents the optimal cut-off with sensitivity and specificity 82.3%% and 79.7% respectively. Current study showed positive correlation of distress thermometer score with PHQ-9 score. **Conclusion:** The single-item DT performs satisfactorily, with an optimal cut-off of 4 (sensitivity =82.3%, specificity =79.7%,) compared to the DSM 5 for identifying depression among patients diagnosed with major depressive disorder.

KEYWORDS

Distress, Major Depressive Disorder, Distress Thermometer

INTRODUCTION

Before 2020, mental disorders accounted for the majority of the burden on global health, with anxiety and depression being the most prevalent. This burden was significant for both sexes, affected all ages, and occurred across different places. The most prevalent psychiatric condition documented in community settings in India is depression(1). In India, the prevalence of depression is 15.9% in the general population, whereas it ranges from 21% to 84% in primary care. Over the previous few decades, an increase in the prevalence of depression has been noted.

The COVID 19 epidemic has aggravated the circumstances that contribute to poor mental health(2) . In 2020, there was a 28% and a 26% increase in instances of major depressive disorder and anxiety disorders, respectively. Younger people suffered more than those in older age groups, and women suffered more than males did (2). One in 15 adults i.e.,6.7% experience depression each year, according to estimates. Moreover, 16.7% of the population, or one in six individuals, would experience depression at some point in their lives.

In order to lessen the impact of illness on public health by slowing the disease's progression, it is crucial to identify those who are depressed and to intervene as soon as feasible. The National Institutes of Mental Health (NIMH) found that studies revealed that 70% of depressed people do not receive treatment for their illness.

The American Psychiatric Association (APA) describes depression as "a common and serious medical illness that negatively affects how you feel, the way you think and how you act.". Major depressive disorder (MDD), the most prevalent depressive diagnosis, is characterised primarily by dysphoria or a depressed mood.

There are several symptoms of MDD in addition to this fundamental experience, such as lack of interest in activities, changes in sleep and eating, guilt and despondency, exhaustion, restlessness, attention issues, and suicidal thinking. Major depressive disorder has a 12-month prevalence that varies greatly between nations but is generally around 6%(4).

Psychological distress is defined as "a multi-factorial unpleasant emotional experience" which ranges from feelings of vulnerability to mood disorders including depression and anxiety disorder(12). Even in patients exhibiting high levels of distress, rates of referral to higher centres tends to be low(13). Early diagnosis and treatment of distress helps to reduce the emotional suffering and the utilisation of essential health services(14).

The Distress Thermometer was originally developed as a screening tool to identify the distress in cancer patients. However, the optimal cut-off score and discriminative accuracy remain unclear. It is a single-item(16), 11-point visual analogue scale, with respondents indicating how distressed they have felt over the past week (from "No Distress" to "Extreme Distress"). The guidelines of National Comprehensive Cancer Network suggest a cut-off score of ⩾5 in oncology samples as indicative of significant distress requiring additional assessment and treatment(17). The NCCN Distress Thermometer is a screening measure to identify and address psychological distress in individuals with cancer. The DT scale has been used for detecting depression in cancer patients in a study by conducted by Hegel et al in 2008 (19).Further studies have also supported its use in detecting depression(31) (32).

At present, there is uncertainty on the best cut-off for identifying depression in people with depressive disorder using distress thermometer based on the available evidence.

Studies have reported various case identification tools for depression that is confusing and time consuming in routine clinical practice(6) and this has created a confusion claiming the validity of different tools combined with a lack of systematic reviews to synthesize a considerable literature. Therefore, the development of a simple and effective screening tool for identifying depression may aid in the early detection and management of Major Depressive Disorder. This study is to determine whether distress thermometer can be used a screening tool for identifying patients with depressive disorder.

METHODOLOGY:

This is a hospital based cross sectional study (diagnostic test evaluation) done at Government Medical College, Thiruvananthapuram in patients attending the Psychiatry OPD between ages of 18-60. For sensitivity 81% and specificity of 85% a sample size of 600 was taken. The study was approved by the Institutional Ethics Committee of the institution. Level of distress is assessed by the single-item,11 -point scale distress thermometer. Clinical diagnosis is made by the clinician according to the DSM-5 criteria for Major Depressive Disorder(30).Level of depressive symptoms is measured using the PHQ-9.Sensitivity refers to the proportion of cases identified by the DSM-5 criteria for major depression that were correctly identified by the DT. Specificity refers to the proportion of non-cases identified by the DSM-5 criteria for major depression that are correctly identified as non-cases by the DT. The word distress was translated as 'asvasthatha' and was indicated on

the distress thermometer. Patients will be asked to indicate their level of distress on the thermometer. Translated Malayalam version of DT will be used for this study. Distress thermometer was not used for assessing depression instead it assessed whether a higher score on distress thermometer can detect a major depression. i.e., whether distress exceeding a limit can be seen as a marker of depression, so that even in the illiterate population the health workers can easily diagnose depression. Data were entered into Microsoft excel sheet and analysis was done using Statistical Manual of Social sciences version 26.

Table 1

Parameter	N (%)
Age	
18-30	294(49)
31-40	133(22)
41-50	101(17)
51-60	72(12)
Sex	
Male	261(43.5)
Female	261(43.5)
Place of residence	
Rural	354(59)
Semi-urban	108(18)
Urban	138(23)
Educational status	
Professional	130(21.7)
Degree	143(23.8)
Intermediate/diploma	86(14.3)
High school	175(29.2)
Primary school	49(8.2)
Illiterate	17(2.8)
Marital status	
Married	366(61)
Unmarried	193(32.2)
Divorced	25(4.2)
Separated	16(2.7)
Occupational status	
Professional	156(26)
Semi-professional	54(9)
Semi-skilled	58(9.7)
Skilled	6(1)
Unemployed	251(41.8)
Type of family	
Nuclear	516(86)
Joint family	84(14)
Socioeconomic status	
Upper class	12(2)
Upper middle	195(32.5)
Upper lower	57(9.5)
Lower middle	225(37.5)
Lower	111(18.5)
Past history of psychiatric illness	72(12)
Family history of psychiatric illness	141(23.5)

Statistical Methods:

The interrater reliability was estimated by the Cohen's kappa statistic. The sensitivity and specificity were calculated comparing the score of Distress Thermometer with the clinician established diagnosis of DSM 5 Major Depressive Disorder. In the present study we found positive correlation between Distress Thermometer and PHQ-9 scores, and which was statistically significant ($P<0.05$).

RESULTS:

A total of 600 people were screened. The sociodemographic description of the sample is provided in Table 1. In the total sample an optimal cut-off 4 had the sensitivity of 82.3% and specificity of 79.7%. Cohen's kappa statistics represented a moderate agreement (0.5).

DISCUSSION:

The aim of the study was to assess the sensitivity and specificity of distress thermometer for detecting depression among patients diagnosed with major depressive disorder. 600 patients who satisfied the inclusion criteria were included in the study.

The mean age of the study subjects was 33.89 years, with a standard deviation of 11.6 and the median age was 31.0. Among them majority belonged to the age group 18-30 years which constituted 49% of the study population followed by age group of 31-40 years (22.2%). Among the study population,56.5% were female and 43.5% were male. 61% of the study population were married, 29.2 % were educated up to high school, but majority were unemployed constituting 41.8% of the study population. The overall prevalence of depression in this study is 14% which reports a high prevalence of depression according to the NMHS(34). For these patients, the DT performed well for identifying depression. A DT cut-off of 4 optimized sensitivity and specificity for detecting depression (Table 2).

Table 2 Distress Thermometer scale and DSM 5

	Depressed	Not depressed
DT >4	84	101
DT < 4	18	397

Major Depression is a disorder associated with high distress level. The prevalence of depression in India is 10% and a significant proportion of patients are illiterate (1). Our study is the first attempt to identify the sensitivity and specificity of Distress Thermometer in detecting depression among primary psychiatric patients. Distress Thermometer was used during COVID times for identifying people with severe depression and anxiety. This is to see whether Distress Thermometer can be used as a screening tool for identifying individuals with primary depressive disorder even in illiterate patients. More rigorous research is being planned for future studies.

CONCLUSION:

We have assessed whether distress exceeding a limit on the DT can be seen as a marker of depression so that even in the illiterate and in the rural population the health workers can easily diagnose depression and refer to a mental health care. This single item tool, the DT performs satisfactorily, with an optimal cut-off of 4 (sensitivity =83.2%, specificity =79.7) relative to the PHQ-9 for identifying depression among patients diagnosed with major depressive disorder.

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