Screening for Depression in Cancer Using the Zung Self Rating Scale

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The purpose of this study was to determine the utility of the Zung Self Rating Scale (ZSRS) as a screening tool for depressive disorders in cancer patients.

Method: Depressive symptoms were assessed in 30 cancer patients according to the Schedules for Clinical Assessment in Neuropsychiatry (SCAN). Diagnosis was made according to the American Diagnostic and Statistical Manual 4th edition (DSM-IV). The Zung Self Rating Scale (ZSRS) was applied on the same patients. Clinical diagnosis revealed 21 patients with major depression (6.6%), 14 (46.7%) with adjustment disorder with mixed anxiety and depression, and 5 (16.7%) with depression not otherwise specified. The ZSRS identified 17 of these patients giving a sensitivity rate of 80.9%. Also, from the 18 patients identified by the ZSRS as having depression only one was not clinically depressed, giving a specifity rate of 94.4% for the scale. Items which differentiated between depressed (n = 18) and non depressed (n = 12) cancer patients included crying spells, confusion, indecisiveness and dissatisfaction. Somatic symptoms including fatigue did not differ between depressed and non depressed cancer patients.

Conclusion :The ZSRS is an easy and valuable instrument in screening for depression in cancer patients.

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INTRODUCTION

Although the prevalence of depression in cancer patients may reach levels as high as 53% (Craig and Abeloff, 1974), yet it may commonly be unrecognized (Lustman et al., 1997). There are numerous reasons why depression may not be diagnosed. Patients are often reluctant to report depressive symptoms to their physicians (Valente et al., 1994). Maguire (1985) found that fewer than one in four patients with psychologic problems disclose them spontaneously to the treatment team because they don't want to "bother" the nurses or physicians, or they fear being stigmatized by having an emotional problem. In addition, symptoms commonly associated with cancer and its treatment (e.g., fatigue, sleep problems, loss of appetite) may be erroneously attributed to the medical illness when they are in fact due to depression.

Finally, physicians are often untrained in the recognition of depression or in distinguishing depressive symptoms from unhappiness associated with illness and difficulties in adjustment. The high prevalence and infrequent recognition of depression supports the need for validated screening measures in this population. Although, often yielding a high rate of false positives the use of a brief paper and pencil screening instru-

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ment capable of detecting depression may be of help in firstly facilitating communication between patients and physicians as regards psychological problems and secondly in raising awareness of such problems in the clinic milieu and subsequently identifying the need for further psychiatric evaluation. However, historically speaking a general limitation of these instruments was their inclusion of symptoms of depression that overlapped with symptoms of medical illness (e.g., fatigue, changes in weight, appetite and libido), thereby potentially limiting their specificity in diagnosis. The purpose of this study was to asses the sensitivity and specificity of the Zung Self Rating Scale (ZSRS) in identifying depressive illness in cancer patients.

This scale has been recently introduced in psychooncology research (Lansky et al., 1985, El-Batrawi, 1990, Dugan et al., 1998).

SUBJECTS AND METHOD

30 consecutive cancer patient from the outpatient radiotherapy clinic of Kasr El Aini Hospital, Cairo University, were initially assessed. Patients with severe cachexia, delirium, fever or scoring less than 20 in the Mini Mental State Examination (Folstien, et al., 1975) were excluded.

Procedure :

(1) Clinical interview by application of the Schedules for Clinical Assessment in Neuropsychiatry (SCAN), (WHO, 1998) was applied. The first author of the study has received official training in application of the SCAN and in turn trained the psychiatric residents in the way to apply it. Repeated meetings and discussions took place until agreement in rating of individual symptoms was felt to be favourable.

(2) Zung Self Rating Scale for depression (ZSRS) (Zung, 1965):

A 20-item quantitative measurement of symptoms of depression. The subjects rate each item regarding how they felt during the previous week. Item responses are ranked from 1 to 4; the higher the number the more unfavourable the response. The sum of the 20 items produces a raw score that is converted into a percentage of the depression measurable by the scale (termed the SDS index). For example, a subject who endorses response that are ranked as 2 for all 20 items produces a raw score of 40 and since the highest score possible is 80, the SDS index (percentage) is 50. These index scores are then categorized into 4 levels to offer a global clinical compression, as recommended by the instrument developers: (I) within normal range, no psychopathology (SDS Index: below 50); (II) presence of minimal to mild depression (SDS index : 50-59); (III) presence of moderate to marked depression (SDS Index: 60-69); and (IV) presence of severe to extreme depression (SDS Index : 70 and over). Scores are not intended to be diagnostic but indicate levels of symptoms that may be of clinical significance (Dugan et al., 1998).

(3) Assessment of Health characteristics for cancer patients:

(A) ECOG performance status: (Eastern Cooperative Oncology Group, 1983):

Grade 0 (normal activity).

Grade 1 (restricted in strenuous activity but ambulatory and able to do light work).

Grade 2 (ambulatory and capable of self care, not able to work).

Grade 3 (limited self care).

Grade 4 (bed bound).

(B) Disease status as defined by Dugan et al., (1998).

Active disease / relapse (cancerous tumours or cells currently spreading). The disease status does not define treatment status (Dugan et al., 1998).

Disease free/remission (no current evidence of cancerous tumours or cells).

Stable disease (cancerous tumours or cells present but not currently spreading).

Statistical analysis was done by t-test and chi-square test.

RESULTS

A) Descriptive:

As seen from table (1), male and female cancer patients were equally distributed with no significant differences in age ($P > 0.05$). The majority (77%) were married and illiterate (60%). As regards type of cancer, there was no predominance of a special type. Leukaemia, lymphoma, breast, as well as bronchogenic carcinoma being nearly equally distributed (10% to 13.3%).

As regards stage of disease more than half of the patients (63%) had early disease (stage I, II) while as regards disease status the majority (70%) were in partial remission (40%) or stationary (30%).

Also, as regards performance status the majority (77%) were in grade I, II while grade III accounted for 23% and none were in grade IV.

As regards clinical diagnosis 2 (6.6%) received a diagnosis of major depression, 14 (46.7%) were diagnosed as adjustment disorder with mixed anxiety and depressed mood, 5 (16.7%) as depression not otherwise specified, 9 (30%) were given no psychiatric diagnosis (table 2).

B) Analysis of Depressive Scores:

Table (2) shows distribution of the cancer patients as regards the ZSRS.

As seen from table (2), 18 (60%) cancer patient exceeded the Zung depressive threshold. From them only one (5.5%) was not considered as clinically depressed. Since we were interested in this study in studying depressive symptoms as experienced by cancer patients, we considered those 18 patients as the depressed cancer group. The remaining 12 (40%) patient not exceeding the ZSRS depressive threshold were considered as the non depressed cancer group.

As regards analysis of individual depressive symptoms, only response in the moderate and severe ranges were considered so as to increase reliability of the results.

Table (3) shows comparison of numbers of depressed cancer patient responding in the moderate and severe ranges of the ZSRS with the number of non-depressed cancer patients responding in the same range.

As seen from, table (3), depressed cancer patients scoremand severe range more frequently than the non-depressed cancer patients in all items of the ZSRS. The difference was statistically significant in 9 items encompassing the following parameters: physiological disturbance (diurnal variation, appetite changes, libidinal changes), pervasive mood changes (crying spells), psychomotor changes (psychomotor retardation) and psychological disturbance (confusion, indecisiveness and dissatisfaction).

As regards gender differences, 11 (36.6%) female versus 6 (20%) male scored above the ZSRS threshold for depression ($P > 0.05$).

Table 1
Demographic, Psychometric and Health Characteristics of Cancer Sample (n=30)

Variable	NO.	%.
Female Patients	15	50%
Male Patients	15	50%
Age:		
Mean = 43 (±15.8)		
For Male, mean = 41.6±14 years.		
For Female, mean=44.5±17.3 years.		
Marital Status		
Married	23	77
Single, divorce, widow	7	23
Illiteracy		40
- Literate	19	60
- Illiterate	18	
Disease type		
- Leukemia	4	13.3
- Lymphoma	4	13.3
- Breast	3	10
- Osteosarcoma	3	10
- Bronchogenic carcinoma	3	10
- GIT Cancer	3	10
Other Sites	10	33.3
Stage of Disease		
Stage		
I	6	20
II	13	43
III	9	30
IV	2	7
Disease Status		
Complete Remission (CR)	2	7
Partial Remission (PC)	12	40
Stationary Disease (SD)	9	30
Disease Progression (DP)	7	23
ECOG Performance Status		
Grade		
0	0	0
I	6	20
II	17	57
III	7	23
IV	0	0
Zung Index Score		
Not Depressed < 50	12	40
Mild Dep. 50-90	10	33
Moderate Dep. 59-69	5	17
Severe Dep. > 69	3	10

Table 2
Distribution of Cancer Patients as Regards Diagnosis and Severity of Depression.

Clinical Diagnosis	Zung Index Score									
	<50		50-59		60-69		>70		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
1. Major depression			1	3.3	1	3.3			2	6.6
2. Adjustment Disorder with mixed anxiety	3	10	6	20	2	6.7	3	10	14	46.7
3. Depression N.O.S	1	3.3	2	6.7	2	6.7			5	16.7
4. No. Psychiatric Diagnosis	8	26.71	3.3							30
Total	**12**	**40**	**10**	**33.3**	**5**	**16.73**	**3**	**10**	**30**	**100**

Table 3
Comparison Between Number of Depressed and Non-depressed Cancer Patients Scoring Moderate and Severe on the ZSRS.

Symptoms	Depressed Cancer Patients (n=18)		Non Depressed Cancer Patients (n=21)		Chi Square Value	P. Value
	No.	%	No.	%		
1. Depressed mood	7	38.8	1	8.3	3.4	>0.05
2. Diurnal Variation	12	66.6	1	8.3	9.9	<0.001
3. Crying Spells	8	44.4	0	0	7.2	<0.01
4. Sleep Problems	9	50	3	25	1.8	>0.05
5. Appetite Changes	15	83.3	2	16.6	13.03	<0.001
6. Libido	11	61.1	1	8.3	8.3	<0.001
7. Weight Changes	7	38.8	3	25	0.62	>0.05
8. Constipation	9	50	1	8.3	5.6	<0.02
9. Tachycardia	5	27.7	1	8.3	1.7	>0.05
10. Fatiguability	6	33.3	2	16.6	1.02	>0.05
11. Confusion	12	66.6	3	25	5	<.05
12. Psychomotor retardation	13	72.2	3	25	6.45	<0.02
13. Psychomotor agitation	6	33.3	1	83	2.5	>0.05
14. Hopelessness	2	11.1	0	0	1.4	>0.05
15. Irritability	10	55.5	0	0	1	>0.05
16. Indecisiveness	6	33.3	0	0	5	<0.05
17. Devaluation	1	5.5	0	0	0.68	>0.05
18. Emptiness	4	22.2	0	0	3.07	>0.05
19. Suicidal Thoughts	3	16.6	0	0	2.2	>0.05
20. Dissatisfaction	8	44.4	1	1	4.47	<0.05

Table 4
Distributions of Cancer patients along ECOG Performance Status and Zung Depressive Scores.

Zung Index	Performance Status							
	Stage I		Stage II		Stage III		Total	
	No.	%	No.	%	No.	%	No.	%
>50	4	13.3	8	26.7	2	6.7	14	46.7
>50	2	6.7	9	30	5	16.6	16	53.3
Total	6	20.0	17	56.7	7	23.3	30	100.0
Chi Square = 13.7			d.f. = 2		P-value < 0.01			

As regards health characteristics (i.e., performance status, disease status and stage of disease), only performance status showed significant differences as regards number of depressed patients in the different ranges of the ZSRS, where patients scoring above the threshold value for depression increased significantly as we proceeded towards greater impairment in the ECOG performance status (see table 4).

DISCUSSION

This study shows that by clinical assessment using a semistructured-interview cancer patients do not generally suffer from severe forms of depression such as major depression. The finding of a 6.6% prevalence of major depression in our sample is supported by a very similar prevalence rate in Derogatis et al's, (1983) study in which a semistructured interview was also used and yielded a 6% prevalence rate of major depression. Also, as evident from the study patients who were diagnosed both clinically and by the ZSRS included those with major depression a finding which supports the use of the ZSRS in screening for clinically significant depression in cancer patients.

Therefore, failure of detecting depression by the ZSRS original cut off score in a minority of the patients clinically diagnosed as adjustment disorder or depression not otherwise specified lead to a sensitivity rate of 80.9%. This sensitivity is considered reasonable when compared with other studies having the same goal as ours. For example, Lustman et al., (1997) applying the Beck Depression Inventory (BDI) in a sample of diabetics, found a sensitivity rate of 82-90% although they were screening for major depression only. Also, Lewis et al., (1990), in a study comparing the General Health Questionnaire (GHQ: Goldberg, (1972) with the Hospital Anxiety and Depression Scale (HAD): Zigmond and Snaith, (1983) in detecting minor psychiatric disorder in dermatology patients found a sensitivity rate of 78.7% and 72.3% respectively when compared to the standard clinical assessment. Therefore, it seems that screening for minor psychiatric disorder is more fraught with difficulties than screening for major depressive disorders especially in populations such as oncology patients where high rates of psychological distress are expected. Also, given the high prevalence of depression in this study whether when clinically diagnosed (70%) or by the ZSRS (60%), it should

be put into consideration that a high percentage of the sample had impaired health performance. In the same argument, Bukberg, et al. (1984) found a 77% rate of major depression in cancer patients with low health performance in comparison to 23% in patients with better functional performance. On the other hand, El Batrawi, 1990 and Dugan et al., 1998 found prevalence rates of depression in cancer patients lower than the present study (36.6% and 36% respctively). However, the latter studies did not include high rates of patients with severely impaired health.

ively). However, the latter studies did not include high rates of patients with severely impaired health.

Therefore, it seems that the prevalence of depression in the range of 60% to 70% is acceptable given the significant association between depression and decreased health performance.

As regards specificity it was found to be 94% (from the 18 patients exceeding the ZSRS depressive threshold, 17 were also clinically depressed). This specificity is rather high when compared to that of the BDI in detecting major depression in diabetics which was found to be 89%, Lustman et al., (1997). Also, in this context, it is important to mention that in ascribing the lable of "case" to a cancer patient especially those with an adjustment disorder, the decision is more complicated than merely sticking to the operational criteria offered by various diagnostic systems. Maguire, (1985) suggests that ample background information regarding the patients psychosocial adjustment is needed before a decision of caseness is made. Such information would include housing conditions, social management and life satisfaction. Therefore, it seems that where a discrepancy arises between a self report assessment and a clinical diagnosis, it is better to make a broader assessment of these patietns' recent adjustment preferably by recent tools which are broadly referred to as quality of life (QOL) tools (Fouad, 1999).

As regards depressive symptoms, which were significantly increased in depressed cancer patients, table (3), we get the impression that these patients are tearful, confused and irritable without experiencing sad or depressed mood. This picture is supported by Spiegel (1996), who noticed that cancer patients face overwhelming emotions which need time and space to get organized. However, Dugan et al., (1998), observed a different clinical picture in their depressed cancer patients which was mainly apathy and anhedonia. However, in the latter study patients seem to have had better functioning with intact denial as a protective mechanism against psychological distress.

As regards somatic symptoms, it was found that appetite changes, libidinal changes, constipation and diurnal variation were significantly increased in the depressed cancer patients, table 3). As these symptoms are very non-specific and depend a lot on the disease site and physical condition of the patient (Dugan et al., (1998), it seems wiser not to include them in screening tools used in psycho-oncology. Dugan et al., (1998) constructed a brief ZSDS which omitted the somatic symptoms found in the original scale. This brief ZSDS was found to be highly correlated with the original ZSDS (Dugan et al., (1998).

Conclusions

The ZSRS seems to be a valuable tool in detecting depression in cancer patients yielding a sensitivity rate of 80.9% and a specificity rate of 94%.

The tearful, confused picture of depression is more diagnostic of depression than the experience of sadness per se and therefore, should be taken seriously as an

indicator of depression whenever it is encountered in a cancer patient.

Impaired health performance is strongly associated with the presence of depressive symptoms.

Self-administered scales can broaden the screening capabilities in many oncology settings. Their routine use is recommended to improve clinicans' ability to recognize depression, provide constant diagnostic feedback, and to open discussion between the physician and the patient.

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تطبيق اختبار زونج لانتقاء حالات الاكتئاب في مرضى السرطان

أجريت هذه الدراسة على ٣٠ مريضاً بالسرطان، بهدف تقييم اختبار زونج من حيث حساسيته ونقائه في تحديد حالات الاكتئاب.

تم تقييم الأعراض الاكتئابية بواسطة الجداول الإكلينيكية في الأمراض العصبية والنفسية (SCAN) ثم تم التشخيص الإكلينيكي وفقاً لدليل التشخيص الأمريكي، الإصدار الرابع. كما تم تطبيق اختبار زونج للاكتئاب على نفس العينة. وبمقارنة عدد المرضى الذين تخطوا حد العتبة لاعتبارهم مرضى اكتئاب في اختبار زونج بعدد المرضى المكتئبين الذين تم تشخيصهم إكلينيكياً، تبين أن اختبار زونج نجح في تشخيص ٨٠,٩٪ من مرضى الاكتئاب (حساسيته ٨٠,٩٪). كما أظهرت الدراسة أن الأعراض الاكتئابية ذات الأهمية في التشخيص شملت نوبات البكاء، والتردد، وعدم الوضوح، والشعور بعدم الرضا. أما الأعراض الجسمية بما فيها الشعور بالإرهاق، فلم تكن ذات دلالة تشخيصية هامة.

ويناقش الباحثون النتائج ويخلصون إلى أن اختبار زونج يعتبر اختباراً سهلاً ودقيقاً لانتقاء حالات الاكتئاب في مرضى السرطان.