

## Original Article

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# Validation of the Brief Edinburgh Depression Scale (BEDS) in a Mexican population with advanced cancer in a palliative care service

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**Abstract**

**Objective.** Depression in palliative advanced cancer patients is common, but often goes unrecognized. One of the first steps toward improving detection is the development of tools that are valid in the specific language and setting in which they are to be used. The Brief Edinburgh Depression Scale (BEDS) is a sensitive case-finding tool for depression in advanced cancer patients that was developed in the United Kingdom. There are no validated instruments to identify depression in Mexican palliative patients. Our aim was to validate the Spanish-language version of the BEDS in Mexican population with advanced cancer.

**Method.** We conducted a cross-sectional study with outpatients from the palliative care unit at the Instituto Nacional de Cancerología in Mexico City. The Mexican BEDS was validated against a semistructured psychiatric clinical interview according to the Diagnostic and Statistical Manual of Mental Disorders, 5th edition, classification criteria for major depressive disorder. The interviewer was blind to the BEDS score at the time of the assessment.

**Result.** Seventy subjects completed the scale and interview. Women represented 71.4% of the sample and median age of subjects was 56.5 years (range, 20–85 years). The prevalence of major depressive disorder according to the psychiatric interview was 20%. The most valid cut-off for defining a case of depression was a score  $\geq 5$  of 18 on the Mexican BEDS, which gave a sensitivity of 85.7% and specificity of 62.5%. The scale's Cronbach's alpha was 0.71.

**Significance of results.** Major depressive disorder is frequent in Mexican palliative patients. The Spanish-language Mexican version of the BEDS is the first valid case-finding tool in advanced cancer patients in this setting.

**Introduction**

Patients with advanced cancer face a complex array of physical, social, psychological, and spiritual situations related to their disease and treatments (Allende-Pérez & Verástegui-Avilés, 2013). These factors contribute to a significant number suffering from mental disorders; with adjustment disorders, delirium, major depression, and anxiety disorders being the most common (Chochinov, 2001; Li, Fitzgerald, & Rodin, 2012a; Mehta & Roth, 2015). In cancer settings, clinical depression is a treatable cause of serious additional suffering and distress in these patients (Chochinov, 2001; Wilson et al., 2007). There are two core symptoms of depression according to the Diagnostic and Statistical Manual of Mental Disorder, 5th ed (DSM-5; American Psychiatric Association, 2014), namely depressed mood and a marked loss of interest or pleasure in most or all activities. To qualify as a major depressive disorder (MDD), one of these two core symptoms must be present for at least 2 weeks, along with at least four other depressive symptoms. The other symptoms include appetite or sleep disturbance, psychomotor agitation or retardation, decreased energy, feelings of worthlessness or guilt, difficulties with memory or concentration, and suicidal ideation (American Psychiatric Association, 2014), which makes the diagnosis of depression a challenge in patients attending services with palliative care for cancer (Li et al., 2012b).

Depression prevalence rates differ depending on the cancer population studied, the diagnostic criteria applied, and the timing and method of assessment (i.e., self-report vs. structured interviews (Carr et al., 2002; Chochinov, 2001; Chochinov et al., 1994; Mitchell et al., 2011, 2012; Wilson et al., 2007). Major depression has been found to occur in approximately 16.5%, 95% confidence interval = 13.1, 20.3, of patients in palliative care settings (Mitchell et al., 2011). It has been associated with poorer health-related quality of life; lower performance status; reduced treatment adherence; more severe physical symptoms such as pain, fatigue, and drowsiness; and perhaps

even increased mortality (Arrieta et al., 2013; Kroenke et al., 2010; Lloyd-Williams et al., 2004; Wadhi Rhondali et al., 2012; Wilson et al., 2007). Furthermore, depressed cancer patients are more likely to have a prominent persistent desire for death (Wilson et al., 2016).

Unfortunately, depression is sometimes viewed as being an appropriate reaction in cancer patients, so it is often overlooked and left untreated by professionals in palliative and nonpalliative settings (Chochinov, 2001; Fallowfield et al., 2001; Sharpe et al., 2004). To try and improve recognition, a first step could develop tools to help identify cases of depression in patients with advanced cancer (Lloyd-Williams et al., 2007). These tools must balance validity of assessment against brevity to avoid burdening frail patients (Chochinov et al., 1997).

The Brief Edinburgh Depression Scale (BEDS) was constructed from the Edinburgh Postnatal Depression Scale, a 10-item self-rating scale, as a case-finding tool for depression specifically in patients with advanced cancer (Cox et al., 1987; Lloyd-Williams et al., 2007). The abbreviated version consists of six items, each rated on a 4-point scale, and gives a sensitivity of 72% and specificity of 83% with a cutoff score of 6 of 18 and was designed for palliative care patients (Lloyd-Williams et al., 2007). The BEDS has been studied and used in the United Kingdom and other European countries (Lloyd-Williams et al., 2013; Mitchell et al., 2012; Rayner et al., 2011; Rhondali et al., 2012, 2014; Ziegler et al., 2011). Additionally, it has been translated and validated in French and Korean (Lee et al., 2009; Rhondali et al., 2012).

In Mexico, there are no validated, brief instruments to identify cases of depression in Mexican palliative patients (Landa-Ramirez et al., 2014). There is an unmet need to improve detection practices so that patients with depression may get opportune access to care, especially because interventions have shown to have an impact in reducing depression severity and improving anxiety, quality of life, role functioning, and even survival (Prescott et al., 2017; Walker et al., 2014).

The main goal of this study was to validate the Spanish-language Mexican version of the BEDS in Mexican population with advanced cancer in a palliative care service.

## Methods

This study was approved by the local Institutional Review Board and Ethics Committee (registration numbers 017/004/CPI and CEI/1114/17, respectively). All patients gave written consent.

## Subjects

Consecutive patients were recruited from September 2016 to March 2017 at the outpatient area of the palliative care service at the Instituto Nacional de Cancerología in Mexico City. The sample size was estimated based on the number of items on the scale, considering 10 participants for each component of the instrument ( $N = 60$ ) (Nunnally & Bernstein, 1995). Patients were eligible if they understood written and spoken Spanish; were age 18 and older; had an Eastern Cooperative Oncology Group Performance Status (Oken et al., 1982) score of 0, 1, or 2; Karnofsky (Yates et al., 1980) index of 50% or better; and clinical prediction of survival through the Palliative Prognosis Index (Morita et al., 1999) A (>6 weeks) or B (4–6 weeks). Participants were required to complete the self-assessment scale and respond to an interview. Those with any uncontrolled physical symptom, cognitive impairment, delirium, psychosis, cerebral metastases, or current antidepressant treatment were excluded.

## Procedure

Baseline information was obtained from medical records. The Spanish-language BEDS items were transcribed from the previously validated, Spanish translated Mexican version of the Edinburgh Postnatal Depression Scale (Alvarado-Esquivel et al., 2006, 2014a, 2014b).

Participants completed the BEDS in the waiting room. Afterwards, they underwent a semistructured clinical interview according to the DSM-5 (American Psychiatric Association, 2014) criteria for MDD. The interview was conducted by a psychiatrist who was blind to the BEDS score at the time of the assessment. Depression was defined as a dichotomous variable based on the presence or absence of MDD.

## Statistical analysis

Quantitative variables were reported as mean  $\pm$  standard deviation when the distribution was normal and as median and range (minimum, maximum) when it was not. Categorical variables were expressed as absolute and relative frequencies. Cronbach's alpha coefficient was used to examine the internal reliability of the scale. To assess the accuracy of the instrument to discriminate between cases and not cases of depression, we performed receiver operating characteristic analysis. Sensitivity and specificity values were used to estimate the criterion validity of different threshold scores of BEDS compared with the reference standard (DSM-5 MDD diagnosis). Prevalence was also determined at various cutoff points (as a percentage). All analyses were performed using STATA, version 12.1, software (StataCorp, 2011).

## Results

The sample comprised 70 participants, with a median age of 56.5 years (range, 20–85 years). Fifty (71%) were female and had 8 years (range, 0–22 years) of formal education. Most participants were married or cohabitating (55.7%,  $n = 39$ ), had an Eastern Cooperative Oncology Group Performance Status score of 1 (55.7%), and a Palliative Prognosis Index survival clinical prediction of A (75.7%). The most frequent oncological diagnosis was gynecological (24.3%,  $n = 17$ ), urological (20%,  $n = 14$ ), and breast cancer (15.7%,  $n = 11$ ). The clinical and sociodemographic characteristics of the sample are described in Table 1.

The reliability of the translated BEDS, as assessed by Cronbach's alpha coefficient of internal consistency, ranged from 0.63 for item 3 to 0.73 for item 6, with an  $\alpha = 0.71$  result for the complete Mexican BEDS (Table 2).

The definition of case using  $\geq 6$  score has a sensitivity of 64.3% and a specificity of 75%. In contrast, lowering the cutoff point to  $\geq 5$  increases sensitivity to 85.7% with 62.5% specificity. Results of the different threshold scores identifying depression in BEDs are shown in Table 3.

The prevalence of depression identified by the DSM-5 interview was 20% ( $n = 14$ ). When the Mexican version of the BEDS was used, with a threshold score of 5, 20.5% of palliative advanced cancer patients were identified as cases of depression (Table 3).

Receiver operating characteristic analysis found the area under the curve for the scale to be 0.826, 95% confidence interval = 0.719, 0.933,  $p < .0001$ , which represents good accuracy to discriminate between cases and not cases of depression (Figure 1).

**Table 1.** Clinical and sociodemographic characteristics of the participants (N = 70)

Patient characteristics (N = 70)	Median	Range (minimum–maximum)
Age (years)	56.5	20–85
Schooling (years)	8	0–22
	Frequency (n)	Frequency (%)
<b>Gender</b>		
Female	50	71.4
Male	20	28.6
<b>Marital status</b>		
Married/cohabitating	39	55.7
Separated/divorced	8	11.4
Single	12	17.1
Widowed	11	15.7
<b>Religious affiliation</b>		
Catholic	51	72.9
Jehovah's Witness	5	7.1
Other Christian	11	15.7
Unaffiliated	2	2.9
None	1	1.4
<b>Previous occupation</b>		
Self-employed	19	27.1
Agriculture	1	1.4
Employed	18	25.7
Student	2	2.8
Homemaker	30	42.9
<b>Oncologic diagnosis</b>		
Head and neck	5	7.1
Gastrointestinal	9	12.9
Gynecological	17	24.3
Hematologic	2	2.9
Liver and bile ducts	2	2.9
Breast	11	15.7
Skin and soft tissue	8	11.4
Lung	2	2.9
Urological	14	20.0
<b>KPS score</b>		
50	3	4.3
60	6	8.6
70	21	30.0
80	19	27.1
90	18	25.7
100	3	4.3

(Continued)

**Table 1.** (Continued.)

Patient characteristics (N = 70)	Median	Range (minimum–maximum)
<b>ECOG</b>		
0	4	5.7
1	39	55.7
2	27	38.6
<b>PPI</b>		
A	53	75.7
B	17	24.3

ECOG, Eastern Cooperative Oncology Group; KPS, Karnofsky Performance Scale; PPI, Palliative Prognostic Index.

**Table 2.** BEDS Cronbach's alpha coefficient for internal consistency

Item	No. of observations	Alpha
1	70	0.6724
2	70	0.6519
3	70	0.6349
4	70	0.6743
5	70	0.6428
6	70	0.7337
Cronbach's alpha		0.7117

**Table 3.** Criterion validity and prevalence of Brief Edinburgh Depression Scale identified depression at different threshold scores

Cutoff score	Sensitivity (%)	Specificity (%)	Prevalence (%)
(≥0)	100	0.0	24.3
(≥1)	100	14.3	24.3
(≥2)	100	28.6	24.3
(≥3)	100	42.9	24.3
(≥4)	92.9	53.6	23.1
(≥5)	85.7	62.5	20.5
(≥6)	64.3	75.0	16.6
(≥7)	64.3	87.5	16.6
(≥8)	57.1	89.3	15.4
(≥9)	28.6	92.9	10.2
(≥10)	21.4	94.6	6.4
(≥12)	14.3	100	2.6
(≥15)	7.1	100	1.3
(>15)	0.0	100	0.0

## Discussion

The development of psychometric scales is necessary for the evaluation of complex phenomena such as depression; however, most of these tools are created in other countries and precludes their

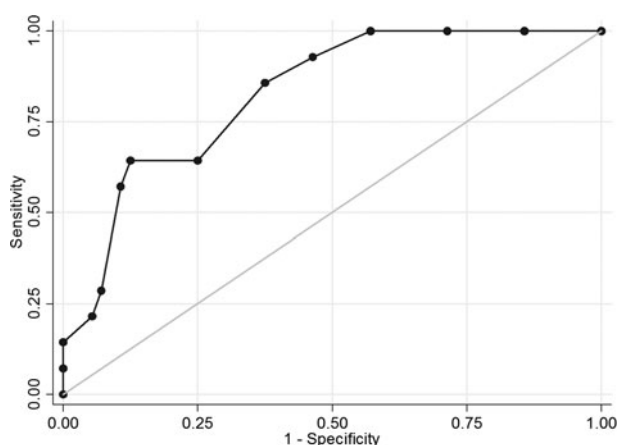


Fig. 1. Receiver operating characteristic curve. Area under the curve = 0.8259.

usage in our language and population. To assess if the instrument works in the same way in different scenarios, it must be validated in the setting it is required to be used. This is especially important in populations with particular characteristics, such as patients with advanced cancer in palliative care, in whom the cancer symptomatology and physical symptoms of depression may overlap. In an effort to improve depression detection, there has been increasing interest in the use of screening and case-finding tools. The results in our study support the Mexican BEDS as a valid case-finding tool for depression in patients with advanced cancer in a palliative care unit.

In the original study, the cutoff score  $\geq 6$  gave a sensitivity of 72% and specificity of 83% (Mari Lloyd-Williams et al., 2007). In our results, that cutoff point yielded lower sensitivity and specificity values. The  $\geq 7$  score was the most stable, with 64.3% sensitivity and 87.5% specificity; however, considering the impact of depression on a frail population with multiple risk factors, an approach that increases diagnosis and, subsequently, proper treatment, may be more useful. A higher sensitivity could be better suited to reduce the proportion of missed cases at the expense of false positives. The cutoff score  $\geq 5$  had 85.7% sensitivity and 62.5% specificity, which is likely to be more useful for identifying patients who need a more in-depth assessment of their mood.

The prevalence of depression in Mexican palliative patients is unknown. In this study, we obtained a prevalence of MDD, according to the DSM-5 interview, of 20%; however, because of the nonprobabilistic sampling and sample size, this prevalence may not properly describe our population. Furthermore, we approached only palliative care patients who were cognitively lucid, with higher performance status, and able to tolerate an interview. Because cognitive impairment and disabling illness may be associated with depression, the actual prevalence could be higher than the one we found. When the Mexican BEDS was used with a threshold score of 5, it identified 20.5% of advanced cancer patients as cases of depression, which reflects good criterion validity.

The Spanish-translated BEDS had a Cronbach's alpha coefficient of 0.71, which is considered acceptable. This result may be affected by the number of items on the scale; in a brief assessment, the value of alpha is reduced. The reliability of the translated version was similar to that reported by other authors (Lee et al., 2009; Lloyd-Williams et al., 2007; Rhondali et al., 2012).

The Spanish-language Mexican BEDS is the first case-finding tool for depression validated in Mexican patients with advanced

cancer in palliative care. We suggest using  $\geq 5$  as a cutoff score to improve detection of cases.

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### Conflicts of interest

Leticia Ascencio-Huertas, Emma Verástegui and Silvia Allende-Pérez are supported by National Council of Science and Technology (CONACyT) National System of Researchers and have not conflict of interest. The rest of the authors do not report actual or potential conflicts of interest.

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