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Translation and validation of the Cardiac Depression Scale to Arabic

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Abstract

Background: The Cardiac Depression Scale (CDS) has been designed to measure depressive symptoms in patients with heart disease. There is no Arabic version of the CDS. We translated and validated the CDS in an Arabic sample of patients with heart disease.

Methods: Forward and back translation of the CDS was followed by assessment of cultural relevance and content validity. The Arabic version of the CDS (A-CDS) and the Arabic version of the Hospital Anxiety and Depression Scale (A-HADS) were then administered to 260 Arab in-patients with heart disease from 18 Arabic countries. Construct validity was assessed using exploratory factor analysis with polychoric correlations. Internal consistency was assessed using ordinal reliability alpha and item-to-factor polychoric correlations. Concurrent validity was assessed using Pearson's correlation coefficient between the A-CDS and the depression subscale of the A-HADS (A-HADS-D).

Results: Cultural relevance and content validity of the A-CDS were satisfactory. Exploratory factor analysis revealed three robust factors, without cross-loadings, that formed a single dimension. Internal consistency was high (ordinal reliability alpha for the total scale and the three factors were .94, .91, .86, and .87, respectively; item-to-factor correlations ranged from .77 to .91). Concurrent validity was high ($r = .72$). The A-CDS demonstrated a closer to normal distribution of scores than the A-HADS-D.

Limitations: Sensitivity and specificity of the A-CDS were not objectively assessed.

Conclusions: The A-CDS appears to be a valid and reliable instrument to measure depressive symptoms in a representative sample of Arab in-patients with heart disease.

Keywords: Arabic; Cardiac Depression Scale; cultural relevance; depression; heart disease; scale validation

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Highlights

- We translated and validated the Cardiac Depression Scale to Arabic.
- Cultural relevance and content validity were satisfactory.
- A stable, parsimonious, and meaningful three-factor model was created.
- Internal consistency and concurrent validity were high.
- The translated scale appears to be a valid and reliable instrument.

1. Introduction

Depression is a leading cause of disability worldwide, afflicting more than 350 million people of all ages (WHO, 2012). Its prevalence ranges from 6.6% to 21% across countries (Kessler and Bromet, 2013), rising to 18.3% in Qatar (Bener et al., 2015). Nearly 20% of patients with heart disease suffer from depression (Carney and Freedland, 2008; Elderon and Whooley, 2013; Thombs et al., 2006), while depression following myocardial infarction is associated with 2.25- to 2.38-fold risk of all-cause mortality and 2.59- to 2.71-fold risk of cardiac mortality (Meijer et al., 2011; van Melle et al., 2004). In patients with heart failure, depression is associated with 51% increased risk of all-cause mortality and 119% increased risk of cardiac mortality (Fan et al., 2014). Based on the consistency of evidence relating depression to adverse outcomes after acute coronary syndrome, the American Heart Association has elevated depression to the status of a risk factor for poor prognosis in patients with acute coronary syndrome (Lichtman et al., 2014).

Given the impact of depression on the prognosis of patients with heart disease, it is not surprising that screening for depressive symptoms in patients with coronary heart disease has also been recommended (Lichtman et al., 2008). Several psychometric scales have been used for this purpose, including the Beck Depression Inventory II (BDI-II) (Beck et al., 1996), the Hospital Anxiety and Depression Scale (HADS) (Zigmond and Snaith, 1983), the

The Arabic version of the Cardiac Depression Scale

Hamilton Rating Scale for Depression (HAM-D) (Hamilton, 1960), and the Centre for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977). These scales are validated and exhibit satisfactory internal consistency [$\alpha = 0.80$ to 0.90 for BDI-II (Beck et al., 1996), $\alpha = 0.67$ to 0.90 for the depression subscale of HADS (Bjelland et al., 2002), $\alpha = 0.77$ to 0.81 for HAM-D (Trajkovic et al., 2011), and $\alpha = 0.85$ to 0.90 for CES-D (Radloff, 1977)]. However, none of these scales were developed specifically for patients with heart disease and therefore, their psychometric properties may not apply to this patient group. Moreover, they may not be comprehensive enough to detect depression in patients with heart disease. The HADS, for example, lacks items related to somatic symptoms of depression, such as fatigue and sleep disturbance. Furthermore, they may not be sensitive enough to detect minor depression, which is clinically significant (Bush et al., 2001; Catipovic-Veselica et al., 2007; Lossnitzer et al., 2013). The BDI-II, for example, has a positively skewed distribution of scores which results in low scores clustering and poor differentiation (Di Benedetto et al., 2006). It is clear that generic scales have significant limitations in assessing depression and depressive symptoms in patients with heart disease (Vieweg et al., 2011).

The Cardiac Depression Scale (CDS) (Hare and Davis, 1996) is the only psychometric scale designed to measure depressive symptoms in patients with heart disease. It was validated in Australian outpatients of a cardiology clinic comprising a wide range of diagnosis including angina, heart failure, post-myocardial infarction, post-surgery, valve disease and arrhythmias. The CDS consists of 26 items scored on a seven-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (7) and it exhibited satisfactory correlations with clinical assessment ($r = .67$) and the BDI ($r = .73$), as well as satisfactory internal reliability ($\alpha = .90$) (Hare and Davis, 1996). It also demonstrated a normal distribution of scores compared to the strongly positively skewed distribution of the BDI (Hare and Davis, 1996), which enables CDS to differentiate low scores and therefore be

The Arabic version of the Cardiac Depression Scale

sensitive enough to detect minor depression. These results have been replicated in other English-speaking samples (Birks et al., 2004; Kiropoulos et al., 2012; Ski et al., 2012; Wise et al., 2006).

The CDS has been translated and validated in German (Hare et al., 2000), Chinese (Wang et al., 2008), and Iranian (Gholizadeh et al., 2010) patients with heart disease. There is no Arabic version of the CDS; therefore, the purpose of this study was to develop an Arabic translation of the CDS and validate it in Arab patients with heart disease.

2. Methods

This study was conducted in two phases:

1. Translation of the original version of the CDS to Arabic ensuring cultural relevance and content validity.
2. Evaluation of construct validity, internal consistency, and concurrent validity of the Arabic version of the CDS (A-CDS).

2.1 Translation of the Cardiac Depression Scale to Arabic

Forward translation (English to Arabic) was conducted by two bilingual Arab experts (psychiatrist and cardiac rehabilitation specialist with Master degree). After translating the scale separately, they met and agreed on the final translation of each item. Back translation (Arabic to English) was conducted by a certified translation services company. Subsequently, the principal investigator (T.P.), the two bilingual Arab experts and two Arab representatives from the translation services company met and finalized each item of the A-CDS. There was unanimous agreement on conceptual equivalence in every item.

2.2 Cultural relevance and content validity

The cultural relevance and the content validity of the A-CDS were evaluated by a panel of six bilingual Arab clinicians (three psychiatrists, one consultant cardiologist, one

The Arabic version of the Cardiac Depression Scale

physiatrist, and one nurse specialized in quality improvement). They were asked to rate the cultural relevance and the content validity of each item by using a 4-point Likert scale: 1 = not relevant, 2 = somewhat relevant, 3 = quite relevant, and 4 = highly relevant. The scale content validity index (S-CVI) was calculated as the proportion of items that achieved a rating of 3 or 4 by all clinicians. An S-CVI score of 80% or higher is indicative of satisfactory content validity (Davis, 1992).

2.3 Evaluation of construct validity, internal consistency, and concurrent validity

2.3.1 Instruments

2.3.1.1 Cardiac Depression Scale

The CDS is a self-administered depression scale for use in patients with heart disease. It consists of 26 items scored on a seven-point Likert scale ranging from *strongly disagree* (1) to *strongly agree* (7). In the original study (Hare and Davis, 1996), seven factors have been reported to comprise the scale: Sleep, anhedonia, uncertainty, mood, cognition, hopelessness, and inactivity. These factors formed two dimensions in a second-order factor analysis. The scale exhibited satisfactory internal consistency ($\alpha = .90$) and correlated with the BDI and clinical assessment ($r = .73$ and $r = .67$, respectively).

2.3.1.2 Hospital Anxiety and Depression Scale

The HADS is a self-administered depression scale developed in a hospital medical outpatient clinic (Zigmond and Snaith, 1983). It consists of 14 items scored on a four-point Likert scale (0-3) that are evenly divided into an anxiety subscale and a depression subscale. The scale comprises two factors (anxiety and depression) and it exhibits satisfactory internal consistency ($\alpha = .86$ for the total scale, $\alpha = .77$ for the anxiety subscale, and $\alpha = .82$ for the depression subscale) (Zigmond and Snaith, 1983). An Arabic version of the HADS has been

The Arabic version of the Cardiac Depression Scale

developed (el-Rufaie and Absood, 1987; el-Rufaie and Absood, 1995) with satisfactory correlation with clinical evaluation ($r = .82$) and internal consistency ($\alpha = .88$).

2.3.2 Procedure

A subject to item ratio of 10:1 was used to estimate the sample size, as it is often used in the absence of clear scientifically sound recommendations on this topic (Anthoine et al., 2014). A convenience sample of 260 adult (18 years and above) patients admitted to the Heart Hospital, a tertiary care hospital for patients with heart disease in Doha and member of Hamad Medical Corporation, were recruited from June 2014 to February 2015 based on data collectors availability (see patient flow in Figure 1). Inclusion criteria were the following: (a) having a diagnosis of heart disease, (b) not suffering from a major psychiatric disease, including schizophrenia, bipolar disorder, and dementia (this was confirmed by reviewing the medical records and asking the participant and family members), (c) being a national of a country where Arabic is an official language, and (d) having Arabic as mother tongue and preferred mode of oral and written communication. The study was approved by the ethics committee of Hamad Medical Corporation. Nurses specialized in cardiac rehabilitation explained the study to eligible participants, provided a sheet with study's details, answered any questions, and obtained verbal consent from participants. Participants were given an envelope with the A-CDS and the Arabic version of the HADS (A-HADS) (el-Rufaie and Absood, 1987; el-Rufaie and Absood, 1995) and were left alone to complete them and seal the envelope. The sealed envelopes were collected later within the day by the same nurse who provided them. Demographic and clinical data were obtained from medical records. All administering personnel were blinded to outcomes and interpretation.

2.3.3 Data analysis

Likert-type item-level data are rarely continuous and normally distributed (Bernstein and Teng, 1989; Jamieson, 2004) and our data were not an exclusion, either. Instead of

The Arabic version of the Cardiac Depression Scale

Pearson's correlations, polychoric correlations are recommended to analyse Likert-type data (Basto and Pereira, 2012; Gaskin and Happell, 2014); therefore, construct validity was evaluated using exploratory factor analysis with polychoric correlations. The Kaiser – Meyer – Olkin (KMO) test for the total scale and each item was used to assess sampling adequacy. A bare minimum of .50 is required for the sample to be adequate (Kaiser, 1974). Parallel analysis (Horn, 1965), often recommended as one of the best methods to determine the number of factors to retain (Hayton et al., 2004; Peres-Neto et al., 2005; Zwick and Velicer, 1986), using principal component analysis as the method for extraction with the original data randomized (permutation data) and the mean eigenvalue criterion (Garrido et al., 2013) was used to determine the number of factors to retain. Ordinary least squares factor analysis (equivalent to minimum residuals (Harman, 1960), also known as unweighted least squares factor analysis (Lee et al., 2012)) was used to extract data, as it is suggested to be the most appropriate extraction method for ordinal data (Gaskin and Happell, 2014). Oblique rotation (quartimin) was used to simplify the structure because psychological factors are typically correlated, and this was the case in our data, as well. A factor loading of .40 or greater was set as a cut-off point for significant loading. The quality of the factorial model was assessed using the goodness of fit index, which can be defined as the fraction of the correlations of the observed variables that are explained by the model. Values greater than .90 usually indicate a good fit.

Internal consistency was evaluated using the ordinal version of Cronbach's alpha, called ordinal reliability alpha (Zumbo et al., 2007), and by estimating the item-to-factor polychoric correlation coefficient, which is the correlation coefficient between the item and its factor with the item removed. Concurrent validity was evaluated using Pearson's correlation coefficient between the A-CDS (and the extracted factors) and the depression subscale of the Arabic version of the HADS (A-HADS-D) (el-Rufaie and Absood, 1987; el-

The Arabic version of the Cardiac Depression Scale

Rufaie and Absood, 1995). The A-HADS was selected instead of the Arabic version of the HAM-D (Hamdi et al., 1997) because it has demonstrated higher internal consistency. Arabic versions of the BDI-II (Abdel-Khalek, 1998; Al-Musawi, 2001; Al-Turkait and Ohaeri, 2010) and the CES-D (Ghubash et al., 2000; Kazarian and Taher, 2010) were not selected because they have been validated in college students and community samples, not in clinical populations.

If one item of the scale was left blank the average item score was inputted. If more than one items of the scale were left blank the scale was discarded. The SPSS ver. 22 with an R-Menu for ordinal factor analysis (Basto and Pereira, 2012) was used for statistical analysis.

3. Results

3.1 Cultural relevance and content validity

The expert panel evaluated the scale and gave an S-CVI score of 69% and 81% for cultural relevance and content validity, respectively, along with comments and suggestions. Two bilingual Arab psychiatrists (investigators H.A and H.G.) revised the items and sent the revised scale back to the expert panel for a second evaluation. The expert panel evaluated the revised scale and gave an S-CVI score of 96% for both cultural relevance and content validity. The item that did not achieve a rating of 3 or 4 by all experts was item 10 “I feel like I’m living on borrowed time”.

3.2 Sample characteristics

Demographic and clinical characteristics of the sample can be seen in Table 1. The mean age was 54 (S.D. = 12.7, range = 19 – 88) years. The sample included nationals from 18 Arab countries and the majority was male (85.4%) and married (88.8%) participants. The mean A-CDS score was 82.5 (S.D. = 26.7, median = 78, range = 28 – 153). Using a cut-off score of 100 for severe depression and 90 for mild to moderate depression (Wise et al., 2006),

The Arabic version of the Cardiac Depression Scale

61 patients (23.5%) demonstrated severe depression and additional 30 patients (11.5%) demonstrated mild to moderate depression.

3.3 Construct validity

One item had been left blank in five A-CDS scales (different item in each scale), in which the average item score was inputted. Additionally, four patients ticked more than one box in a single item in the A-CDS (different item in each patient); these patients were asked to clarify their response by the same nurse who administered the scales at the same day. The KMO sampling adequacy test for the total scale was .89. Measures of sampling adequacy in the items ranged from .75 to .95. Item skewnesses ranged from -.07 to 2.13 and kurtoses from -1.58 to 3.95. All items had statistically significant Kolmogorov-Smirnov and Shapiro-Wilk tests ($p < .001$) and visual inspection confirmed significant deviations from normal distribution in all items. Parallel analysis using principal component analysis as the method of extraction with the original data randomized (permutation data) and the mean eigenvalue criterion indicated that three factors should be retained. Ordinary least squares factor analysis with oblique (quartimin) rotation created a three-factor model accounting for 48% of variance. Factor 1 included the items from the original scale (Hare and Davis, 1996) factors “Sleep”, “Uncertainty”, “Mood”, and “Inactivity”. Factor 2 included the items from factors “Anhedonia” and “Cognition”, and Factor 3 included the items from factor “Hopelessness”. Loadings ranged from .40 to .84 and there were no cross-loadings with loadings greater than .40 (see Table 2). All factors were correlated with correlations ranging from .37 to .56. The goodness of fit index was .92. Using the same methodology that was used in the first-order factor analysis, a second-order factor analysis produced a single dimension containing all original three factors with loadings ranging from .67 (Factor 3) to .87 (Factor 1) and accounting for 58% of variance.

3.4 Internal consistency

The Arabic version of the Cardiac Depression Scale

Item-to-factor correlation coefficients ranged from .77 to .91. Ordinal reliability alpha for Factor 1, 2, and 3 were .91, .86, and .87, respectively. The ordinal reliability alpha for the total scale was .94.

3.5 Concurrent validity

The A-CDS correlated significantly with the depression and anxiety subscales of the A-HADS ($r = .72$ and $r = .78$, respectively, $p < .001$ for both). All factors of the A-CDS also correlated significantly with both subscales of the HADS (see Table 3). The distribution of scores of the A-CDS had skewness .48 and kurtosis $-.36$ and was more normal (see Figure 1) than the distribution of scores of the depression subscale of the A-HADS, which had skewness .96 and kurtosis .92 (see Figure 2).

4. Discussion

This study was the first attempt to translate the CDS to Arabic and validate it in an in-patient population with heart disease. The findings demonstrated that the A-CDS is a valid and reliable instrument for measuring depressive symptoms in Arab patients with heart disease. The population was multinational comprising nationals from 18 Arabic countries and included a wide range of age and a typical spectrum of heart disease diagnoses; therefore, the generalizability of the results could benefit the vast majority of Arab patients with heart disease.

The CDS is most commonly used for depression screening in patients with heart disease. Using recommended cut-off scores (Wise et al., 2006), the A-CDS demonstrated that 23.5% of the study population exhibited major depression. This is in line with international data (Carney and Freedland, 2008; Elderon and Whooley, 2013; Thombs et al., 2006) and adds to the validity of the A-CDS. This finding, however, should be interpreted with caution because these cut-off scores have been produced using the Geriatric Depression Scale—Short Form (GDS-SF) (Sheikh and Yesavage, 1986) as a criterion measure. The GDS-SF has been

The Arabic version of the Cardiac Depression Scale

validated in a wide variety of populations, including primary care clinics, geriatric outpatient clinics, nursing homes, and medical and neurological in-patients (Wancata et al., 2006), but not specifically in patients with heart disease; therefore, its psychometric properties in patients with heart disease are unknown.

The A-CDS demonstrated a closer to normal distribution of scores compared to the positively skewed distribution of scores of the A-HADS-D. Similar findings have been reported when comparing the CDS with the BDI (Birks et al., 2004; Di Benedetto et al., 2006; Gholizadeh et al., 2010; Hare and Davis, 1996). This can be explained by the fact that the CDS was originally developed to assess “adjustment disorder with depressed mood” rather than major depressive disorder (Hare and Davis, 1996). A close to normal distribution of scores enables the A-CDS to detect and differentiate between mild to moderate depressive symptoms, which have clinical and prognostic significance (Bush et al., 2001; Catipovic-Veselica et al., 2007; Lossnitzer et al., 2013); therefore, using the A-CDS to screen Arab patients with heart disease for depression can provide clinicians with better information in order to decide whether the patient needs to undergo further psychological evaluation or not; and using the A-CDS to assess changes in depressive symptoms could produce more accurate results, especially within the mild to moderate depressive symptoms spectrum.

The exploratory factor analysis created a stable, parsimonious, and meaningful three-factor model. These factors formed a single dimension in a second-order analysis. Sample adequacy and goodness of fit were satisfactory. In the original study (Hare and Davis, 1996) a seven-factor model was reported, which formed two dimensions in a second-order analysis. Since then three exploratory factor analyses have been performed in the English scale (Birks et al., 2004; Kiropoulos et al., 2012; Wise et al., 2006), one in a German version (Hare et al., 2000), one in a Chinese version (Wang et al., 2008), and one in an Iranian version (Gholizadeh et al., 2010). The resulted factorial models differed: One-factor (Birks et al.,

The Arabic version of the Cardiac Depression Scale

2004), two-factor (Gholizadeh et al., 2010), six-factor (Kiropoulos et al., 2012; Wang et al., 2008; Wise et al., 2006), and seven-factor (Hare et al., 2000) models were reported. The differences in the models, including our model, can be attributed to methodological differences between studies, including sample size, sample language and culture, heart disease diagnosis, and method of analysis. We could not compare sample adequacy and goodness of fit measures because they were not reported in any of the studies. Furthermore, none of the studies used polychoric correlations, although Likert-type item-level data are rarely continuous and normally distributed (Bernstein and Teng, 1989; Jamieson, 2004). Regarding determining the number of factors to extract, most studies aimed to replicate the methodology of the original study (Hare and Davis, 1996) and used the eigenvalues greater than one rule (Kaiser, 1960). However, there is agreement in the literature that this criterion is one of the least accurate criteria to determine the number of factors to extract and that it usually overestimates this number (Costello and Osborne, 2005; Fabrigar et al., 1999; Lance et al., 2006; Velicer and Jackson, 1990). Parallel analysis, on the other hand, is considered one of the best methods for this task (Hayton et al., 2004; Peres-Neto et al., 2005; Zwick and Velicer, 1986). Last, different methods were used to extract data, including maximum likelihood analysis (Hare et al., 2000), principal components analysis (Kiropoulos et al., 2012; Wang et al., 2008; Wise et al., 2006) and principal axis factoring (Birks et al., 2004; Gholizadeh et al., 2010). It should be noted that for ordinal data the recommended method for data extraction is ordinary least squares factor analysis (Gaskin and Happell, 2014).

The total A-CDS and the three comprising factors exhibited excellent internal consistency ranging from .87 to .94. This was also evident by the high item-to-factor correlations. Moreover, the three factors correlated moderately to each other indicating a balance between homogeneity and differentiation of the scale.

The Arabic version of the Cardiac Depression Scale

The moderate to high correlation between the A-CDS and the A-HADS-D indicated satisfactory concurrent validity. It should be noted, though, that the criterion measure (HADS and A-HADS) has been developed and validated in hospital medical clinic outpatients (Zigmond and Snaith, 1983), and primary healthcare outpatients (el-Rufaie and Absood, 1987; el-Rufaie and Absood, 1995), not in patients with heart disease. Moreover, it lacks items related to somatic symptoms of depression. Therefore, although it may be a good choice among available scales, it is not the best criterion measure for concurrent validity in this study; a clinical evaluation would be the best criterion measure but it was not feasible in our study. Therefore, the sensitivity and specificity of the A-CDS could not be objectively assessed.

We also found a moderate to high correlation between the A-CDS and the anxiety subscale of the A-HADS, which was stronger than the correlation between the A-CDS and A-HADS-D (.78 vs .72, respectively). Although the difference in the correlations may not be clinically significant, it suggests that there was a comorbidity of depression and anxiety in our sample. This may have two not mutually exclusive explanations: a) The comorbidity of depression and anxiety is evident worldwide (Kessler et al., 2015) and in the Arabic population specifically (Al-Turkait et al., 2011; Belzer and Schneier, 2004; Ohaeri et al., 2010) and b) there is evidence that depression is correlated to anxiety in patients with heart disease (Frasure-Smith et al., 1995; Watkins et al., 2013) and this comorbidity can affect between 21% to 26% of the patients (Doering et al., 2010; Frasure-Smith and Lesperance, 2008). Both explanations support the validity of the A-CDS.

5. Limitations

The sensitivity and specificity of the A-CDS were not objectively assessed because it was not possible to perform a clinical evaluation of the sample.

6. Conclusions

The Arabic version of the Cardiac Depression Scale

The A-CDS appears to be a valid and reliable instrument that measures depressive symptoms in Arab in-patients with heart disease. The spectrum of nationalities and the typicality of the diagnoses in the sample encourage the generalization of the findings to the vast majority of Arab patients with heart disease. Further studies to assess sensitivity and specificity of the A-CDS are needed.

Conflict of interest

All authors declare that they have no conflicts of interest.

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The Arabic version of the Cardiac Depression Scale

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Fig. 1. Patient flow during recruitment period.

Fig.2. Distribution of scores of the Arabic version of the Cardiac Depression Scale. A-CDS, Arabic version of the Cardiac Depression Scale.

Fig.3. Distribution of scores of the depression subscale of the Arabic version of the Hospital Anxiety and Depression Scale. A-HADS, Arabic version of the Hospital Anxiety and Depression Scale.

Table 1

Demographic and clinical characteristics of the sample.

Variable	n (N = 260)	%
Sex		
Male	222	85.4
Female	38	14.6
Nationality		
Qatar	74	28.5
Egypt	67	25.8
Syria	21	8.1
Palestinian Territory	20	7.7
Sudan	19	7.3
Jordan	15	5.8
Yemen	10	3.8
Lebanon	7	2.7
Oman	5	1.9
Iraq	5	1.9

The Arabic version of the Cardiac Depression Scale

Bahrain	4	1.5
Saudi Arabia	3	1.2
Somalia	2	0.8
Tunisia	2	0.8
Algeria	2	0.8
Mauritania	2	0.8
Eritrea	1	0.4
Kuwait	1	0.4
Marital status		
Married	231	88.8
Single	19	7.3
Divorced	5	1.9
Widow(er)	5	1.9
Diagnosis		
Acute coronary syndrome	130	50.0
Coronary artery disease	59	22.7
Heart failure	28	10.8
Arrhythmia	24	9.2
Valve disease	9	3.5
Cardiomyopathy	5	1.9
Aortic dissection	2	0.8
Pericarditis	2	0.8
Myopericarditis	1	0.4

Table 2

Factor loadings for the A-CDS using ordinary least squares factor analysis with oblique (quartimin) rotation

Item	Description	Factor loadings		
		Factor 1 (sleep, uncertainty, mood, inactivity)	Factor 2 (anhedonia, cognition)	Factor 3 (hopelessness)
9	I wake up in the early hours of the morning and cannot get back to sleep	.76		
5	I am concerned about the uncertainty of my health	.75		
6	I may not recover properly	.74		
7	My sleep is restless and disturbed	.74		
1	I have dropped many of my interests and activities	.62		
18	Things which I regret about my life are bothering me	.62		
8	I am not the person I used to be	.62		
24	I lose my temper more easily nowadays	.56		
22	I seem to get more easily irritated by others than before	.53		
3	I can't be bothered doing anything much	.47		
17	My problems are not yet over	.46		
21	I become tearful more easily than before	.46		
13	The possibility of sudden death worries me	.45		
25	I feel frustrated	.44		
26	I am concerned about my capacity for sexual activity	.42		
16	I get hardly anything done	.40		

The Arabic version of the Cardiac Depression Scale

20	My memory is as good as it always was	.84	
15	My mind is as fast and alert as always	.82	
19	I gain just as much pleasure from my leisure activities as I used to	.61	
2	My concentration is as good as it ever was	.60	
23	I feel independent and in control of my life	.57	
4	I get pleasure from life at present	.46	
12	I feel in good spirits	.43	
11	Dying is the best solution for me		.80
14	There is only misery in the future for me		.77
10	I feel like I'm living on borrowed time		.68

A-CDS, Arabic version of the Cardiac Depression Scale

Table 3

Pearson's correlation coefficients between the A-CDS and the A-HADS domains.

A-CDS	A-HADS Depression	A-HADS Anxiety
Factor 1 (sleep, uncertainty, mood, inactivity)	.66	.77
Factor 2 (anhedonia, cognition)	.60	.53
Factor 3 (Hopelessness)	.52	.55
Total scale	.72	.78

All correlations are significant at .001.

A-CDS, Arabic version of the Cardiac Depression Scale; A-HADS, Arabic version of the Hospital Anxiety and Depression Scale.