

This is a **Sample** version of the
Cardiac Depression Scale (CDS)

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CARDIAC DEPRESSION SCALE: VALIDATION OF A NEW DEPRESSION SCALE FOR CARDIAC PATIENTS

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Abstract – Assessing the effect of interventions on quality of life in cardiac patients lacks sensitivity because there is no specifically validated scale for measuring depression in cardiac patients. A questionnaire of 35 items (selected for face validity) was given to 246 cardiac outpatients (age 59.3 ± 14.1 years, 159 male, 87 female). The Beck Depression Scale was then administered, followed by blinded clinical rating of depression. The item scores were subjected to common factor analysis. Internal consistency was assessed using α reliability coefficients and clinical validity using Spearman correlation coefficients. The final scale consisted of 26 items (α reliability coefficient 0.90) in 2 robust dimensions and 7 subscales. The scale correlated well with clinical rating and with the Beck Depression Scale, but without the marked skewness of the latter. The behavior of the new Cardiac Depression Scale suggests that it will be an excellent measure for studies of outcome in cardiac patients.

Keywords: Cardiac patients; Depression; Measurement; Quality of Life; Rehabilitation.

INTRODUCTION

“Quality of Life” is now generally regarded as an important outcome of clinical management and research trials. It is often used as a multidimensional term to cover the functional, psychological, cognitive, and social aspects of living. Some quality of life scales have been designed to incorporate a range of dimensions, but it is very important to be able to sensitively and reliably measure specific aspects of this quality. This is especially important for the measurement of depression, which is found very commonly in cardiac patients, often in a relatively mild form [1, 2].

Cardiovascular disease is the most common cause of death in the western world, accounting for almost half the total mortality. However, existing measures of depression are not always suitable for cardiac patients because they have been developed and validated in other populations [3], often in more severely depressed psychiatric patients. Of course, general scales for measuring depression have the advantage of allowing comparison between different population groups or across disease states, but they can lack responsiveness that might still have clinical significance [4]. Similarly, scales that have excellent reproducibility over time (such as those for measuring personality traits) will generally be too stable for use in clinical studies where it is

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necessary to measure change with instruments that are more responsive to change. Some research studies have used rating scales for depression that will be insensitive to all but very large differences between patient groups [3]. More specific instruments that are derived from, and are for use in, designated populations have potentially major advantages in this context.

The aim of this study was to develop an easily administered self-rating cardiac depression scale (CDS), derived from the responses of cardiac patients themselves, for the reliable measurement of depression in the range commonly found in this particular population.

METHODS

Scale development

Fifty items purporting to be associated with depression in cardiac patients were listed by a range of health professionals who had extensive experience in managing cardiac patients. These professionals came from the disciplines of cardiology, psychiatry, psychology, occupational therapy, physiotherapy, and cardiac nursing. Thirty-five items were selected by consensus, constituting the face validity of the scale. Care was taken to avoid almost identical questions. Some positive as well as negative items were chosen and then structured on a Lichert scale from 1 to 7 for range of responses on a self-rating questionnaire. The order of statements was drawn up by mixing the 24 depression items with the 11 positive items to avoid a patient response set. The introduction to the questionnaire made it clear that there were no right or wrong answers and that all items needed to be completed.

Patient population and administration

The study population consisted of 248 ambulatory adult cardiac outpatients attending a single general cardiac clinic with a wide range of diagnoses, including angina, heart failure, post-myocardial infarction, postsurgery, valve disease, and arrhythmias. These patients are generally representative of patients attending similar clinics throughout the western world. All ages and diagnoses were included, and patients were only excluded if their grasp of English was insufficient to complete the questionnaires.

Prior to cardiac assessment, consent was obtained from the patients after they had received both verbal and written explanation of the study. They then responded to the 35 items of the initial Cardiac Depression Scale followed by the Beck Depression Inventory [5]. Clinical rating of depression was then undertaken by a single physician trained in both cardiology and psychiatry, and the overall severity was summarized on a 10-centimetre visual analogue scale [6, 7]. The general construct used for clinical rating of depression was that of an "Adjustment Disorder with Depressed Mood" in the *Diagnostic and Statistical Manual of Mental Disorders*, third edition, revised (*DSM-III-R*) [9]. The degree of depression, using this construct, was determined in the light of extensive clinical experience assessing depression in cardiac patients. The visual analogue scale was used to avoid using a rating scale that might presuppose another construct.

Scoring

The 24 depression items were directly scored from 1 to 7. The 11 positive items were reverse-scored. The individual item scores were recorded and separately analyzed. Higher scores indicate worse functioning. Scoring of the scale items was undertaken by a psychologist not involved in the administration of the scale nor in the clinical rating of the patients.

Analysis

The individual item scores of the 35-item scale were subjected to common factor analysis using maximum likelihood factor extraction and oblimin oblique rotation to allow for non-orthogonal factors. The number of factors was determined by the inclusion of those with an initial eigen value (for total variance) greater than one, based on principal component solution. Subscales were constructed from the factors using only those items that loaded significantly (loading > 0.3) on a factor.

Scores for each subscale were calculated by simple addition of the included item scores. Internal reliability was evaluated using Cronbach's alpha [8], which was calculated for each of the derived subscales. Cronbach's alpha is determined by randomly assorting scale items into multiple split-half comparisons to examine whether a scale reflects an underlying unitary construct. Correlation coefficients were calculated between the subscales and then between each subscale and both the Beck and the clinical assessment.

A second-order factor analysis was then undertaken using these newly derived subscales. These new factors were extracted on the basis of the initial eigen values, including only those items that had loaded significantly in the first analysis. Cronbach's alpha was calculated for each new factor (designated as a

**This is the end of the sample CDS clinical validity.
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Cardiac Depression Scale (CDS)

Scoring & administration

Depressed mood is very common in cardiac patients and has the potential to persist after major cardiac events. One-third of patients have been demonstrated to have significant depression persisting 1 year after acute myocardial infarction, and a similar number after coronary artery surgery. The combination of depressive symptoms with another medical condition results in an additive effect, further worsening physical functioning. However, it has been shown that the effective management of depression can help patients cope better with the other illnesses.

It is important to be able not only to detect more severe cases of depression that require "treatment" but to measure all degrees of depression as it affects patient lives. This will allow differentiation of outcomes between different management strategies. This new cardiac depression scale is a robust measure of depression over the range seen in cardiac patients.

The CDS contains 26 question items which are directly scored from 1 to 7. With 7 positive items that are reverse-scored.

The Cardiac Depression Scale is made up of 26 items which are divided into 7 subscales.

Respondents are asked to rate their answer on a rating scale from 1 to 7 to indicate how much they agree or disagree with the statement e.g – Strongly disagree 1 2 3 4 5 6 7 Strongly agree

**This is the end of the sample CDS scoring & administration instructions.
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Cardiac Depression Scale (CDS)

This questionnaire consists of a number of statements about the way you feel **at present**.

Next to each statement there is a rating scale from 1 to 7 for you to indicate how much you agree or disagree with the statement

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Please indicate how strongly you agree or disagree with each statement by circling one of the numbers on the scale.

THERE ARE NO RIGHT OR WRONG ANSWERS

PLEASE ENSURE YOU HAVE COMPLETED ALL 26 ITEMS

CDS							
1. I have dropped many of interests and activities...	1	2	3	4	5	6	7
	None dropped					All dropped	
2. My concentration is as good as it ever was...	1	2	3	4	5	6	7
	Very poor concentration					Excellent concentration	
3. I can't be bothered doing anything much...	1	2	3	4	5	6	7
	Keen to do things					Can't be bothered	
4. I get pleasure from life at present....	1	2	3	4	5	6	7
	No pleasure					Great pleasure	

This is the end of the sample CDS questionnaire.
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