Perfect Scale for the Depression Diagnosis in the Athletes: A Comparison of the Clinical Tools – Review

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Abstract
Background: This review provides a critical analysis of selected clinical assessment instruments for depression, with emphasis on their utility in everyday medical practice and their adaptability to individual patient profiles. Given the multifactorial etiology and diverse symptomatology of depressive disorders, appropriate diagnostic tool selection is essential for accurate evaluation and monitoring.
Aim: The paper reviews widely used depression assessment scales, including the Hamilton Depression Rating Scale (HDRS), Montgomery-Åsberg Depression Rating Scale (MADRS), Beck Depression Inventory (BDI), Patient Health Questionnaire (PHQ), Zung Self-Rating Depression Scale (ZSDS), Center for Epidemiologic Studies Depression Scale (CES-D), Depression Anxiety Stress Scales (DASS), and others, analyzing their relevance to various clinical populations, including athletes.
Materials and Methods: A structured literature review was conducted using PubMed and Web of Science databases. Keywords included: major depressive disorder, psychometric assessment, screening tools, diagnostic evaluation, and mood disorders.
Results: The examined tools differ in structure, scoring methods, and clinical applicability. Their utility varies depending on age, comorbidities, and context. Some instruments are better suited for older adults, postpartum women, or adolescents, while others may offer better sensitivity in athletic populations. Matching the tool to the individual's clinical and psychosocial profile improves diagnostic accuracy and treatment outcomes.
Conclusions: Selecting depression assessment scales based on psychometric quality and population specificity—particularly in underrepresented groups such as athletes—can optimize diagnosis and facilitate effective, personalized treatment strategies.

Keywords: major depressive disorder, diagnostic tools, clinical assessment, athlete mental health

Contents

1. Introduction

Due to its complex etiology and its impact on patients of varying ages, manifesting through diverse symptoms, depression requires tailored scales to facilitate accurate diagnosis and effective monitoring of treatment progress. Despite advances in diagnostic tools, identifying and assessing depression remains a significant clinical challenge, especially given the subtle variations in symptoms due to age and individual patient experiences. A review of the literature reveals that the majority of psychiatrists do not employ standardized scales to assess the efficacy of depression treatment. The primary reasons for this omission are the lack of training in the use of these scales, the time-consuming nature of the scales, and a perceived lack of efficacy in using them (Zimmerman & McGlinchey, 2008). The growing awareness of depression in non-traditional clinical populations—such as athletes—further underscores the need for diagnostic tools tailored to their unique psychosocial and physiological context. Competitive sports environments are associated with high performance pressure, injury-related stress, and stigma surrounding mental health, all of which may lead to underrecognition or atypical presentation of depressive symptoms in this group.

Encouraging clinicians to utilize standardized scales for diagnosing and monitoring depression could lead to significant improvements in both clinical and scientific outcomes. Standardized scales provide a consistent, objective means of assessing depression severity, allowing clinicians to make more accurate diagnoses and monitor changes in symptoms over time. This consistency is crucial in developing tailored treatment plans that align with each patient's unique presentation of depression. Moreover, standardized assessments enable a cumulative understanding of depression's patterns and progressions across various patient demographics, which can inform best practices and enhance the precision of clinical research.

The growing prevalence of depression emphasizes the need for diagnostic practices that extend beyond traditional psychiatric settings, involving other fields such as geriatrics, internal medicine, and primary healthcare (Maurer et al., 2018). Patients with co-occurring physical illnesses or those in later stages of life may display symptoms of depression that differ in presentation from classic cases, necessitating a broader, interdisciplinary approach to diagnosis and care. Non-psychiatric clinicians are increasingly in a position to recognize depressive symptoms, particularly among patients with chronic conditions or those who may have limited access to mental health specialists. By integrating standardized screening tools into these settings, healthcare providers can identify depressive symptoms early, even in non-psychiatric consultations.

With an array of well-researched diagnostic scales available, clinicians are better equipped to detect depression across different life stages, from adolescence to old age. Early identification and intervention are key to effective depression management, helping to prevent the condition from worsening and improving overall treatment outcomes. Thus, standardized assessment tools serve not only as aids in individual patient care but also as foundations for broader research, ultimately contributing to a deeper understanding of depression and fostering more effective, accessible mental health care across the medical spectrum.

2. Research materials and methods

Publications available in PubMed and Web of Science were used for the literature review. The following key word combinations in English were used: "depression", "scales", "diagnosis", "diagnostic", "depressive disorders", "screening".

3. Research results

3.1. Depression rating scales

The scales used to assess depression can be divided into two categories: observer-rating scales and self-assessment scales. Observer rating scales rely on the experience and objectivity of the evaluator and may include, for example, the Hamilton Depression Rating Scale, and the Montgomery-Asberg Depression Rating Scale Interview. On the other hand, self-assessment scales are less time-consuming and free of clinician bias. These include the Beck Depression Inventory, Patient Health Questionnaire, Depression Anxiety Stress Scales-21, Edinburgh Postnatal Depression Scale, Geriatric Depression Scale (Demyttenaere & Jaspers, 2020).

3.1.1. Observer-rating scales

Hamilton Depression Rating Scale (HAM-D)

The Ham-D is a popular questionnaire, which exists in various versions, the most prevalent of which are the 17- and 21-point versions. However, approximately 20 distinct variants are observed in clinical practice, which differ in the specifics of the assessment. Completing it takes about 15-20 minutes. It is widely used for evaluating antidepressant efficacy in clinical research but was initially developed in the 1950s to assess first-generation antidepressants (HAMILTON, 1960). The principal benefit of the Hamilton scale is its capacity to monitor the progression of depressive disorders, rendering it a valuable instrument for tracking alterations in symptom intensity in patients undergoing treatment. By conducting repeated assessments, the efficacy of therapy can be assessed and appropriate modifications to the treatment plan can be made based on the results. In clinical trials, the HAM-D is frequently employed as a benchmark for evaluating the effectiveness of antidepressant medications and psychotherapy (Khan et al., 2002).

However, certain items contribute minimally to evaluating depression severity, and its multidimensional factor structure can yield ambiguous results across different patient groups.

Montgomery-Åsberg Depression Rating Scale (MADRS)

MADRS is a modification of the Hamilton Depression Scale, focusing on 10 items rated on a seven-point scale, primarily for individuals over 18 (Montgomery & Asberg, 1979). MADRS is particularly useful for patients with early-onset dementia, offering better diagnostic accuracy

than the Cornell Scale for Depression in Dementia (CSDD), which is also applicable (Leontjevas et al., 2009). Furthermore, current literature underscores MADRS's effectiveness in detecting depressive symptoms in severely obese patients (Paiva-Medeiros et al., 2015). The MADRS scale demonstrates high sensitivity and specificity in assessing moderate to severe depression, and its high inter-assessment reliability makes it suitable for use by a variety of professionals.

3.1.2. Self-assessment scales

Patient Health Questionnaire-9 (PHQ-9)

The Patient Health Questionnaire-9 (PHQ-9) is a screening tool designed for use in primary care and other medical settings to identify individuals with symptoms of depression. It consists of nine main questions and one additional question. The main questions focus on depressive symptoms outlined in the DSM-IV diagnostic criteria, which have not significantly changed in DSM-V for depression diagnosis (Costantini et al., 2021). The PHQ-9 is a valuable tool for diagnosing and assessing the severity of depressive disorders. One notable advantage of this scale is its brevity, which is a significant advantage over many other measures of depression. Patients complete it in about five minutes. Despite its concise nature, the PHQ-9 demonstrates comparable sensitivity and specificity, and it aligns with the diagnostic criteria (Kroenke et al., 2001).

Beck Depression Inventory-II (BDI-II)

The BDI-II is a self-assessment tool consisting of 21 questions, designed to measure the severity of depressive symptoms in adults and adolescents aged 13-80. It is primarily used for outpatient evaluation of depression severity, with a completion time of 5-10 minutes, allowing for quick treatment monitoring. While the BDI-II assesses symptom intensity, it does not serve as a standalone diagnostic tool (Dozois, 2010).

While the BDI-II assesses symptom intensity, it does not serve as a standalone diagnostic tool. Patients with other organic illnesses tend to report more somatic symptoms, resulting in slightly higher BDI-II scores than those with depression alone, yet these scores still fall below the mild depression threshold (Wang & Gorenstein, 2013). For these patients, considering the shorter BDI-FS version, which omits somatic elements, may help distinguish those with chronic pain or fatigue (Poole et al., 2009).

Zung Self-Rating Depression Scale (SDS)

The scale comprises 20 items that assess the severity of depressive symptoms, including pessimism, low mood, guilt, sleep disturbances, fatigue, and appetite changes (Zung, 1965). The scale is employed in mental health screening and monitoring, particularly in the context of mood disorders. Due to its widespread use, the Zung Self-Rating Depression Scale is utilized in epidemiological and psychometric studies, facilitating the comparison of results across diverse research groups (Yesavage et al., 1982). Despite the extensive utilization of this assessment instrument, there is a paucity of consensus regarding the optimal cutoff score for diagnosing depression. One proposed cutoff point is 50 points (Dunstan & Scott, 2019).

Center for Epidemiologic Studies Depression Scale (CES-D)

The scale comprises 20 items designed to assess the severity of depressive symptoms over the past week (Radloff, 1977). The CES-D was developed primarily for use in epidemiological and population-based studies, thus it is relatively straightforward to use and can be completed in a short time. The scale focuses on symptoms such as depressed mood, loss of interest, sleep disturbances, feelings of fatigue, and problems with concentration, which enables it to detect the risk of depression in broad populations, even without a full clinical diagnosis. The CES-D is readily used in public health, aging, and quality of life studies (Lewinsohn et al., 1997).

Nevertheless, some researchers have raised concerns about the psychometric properties of certain items, which may lead to artificially elevated scores in specific populations, including the elderly, individuals with chronic pain, or those experiencing symptoms of other disorders such as anxiety (Carleton et al., 2013).

3.2. Age-specific self-assessment scales

Depression Anxiety Stress Scales-21 (DASS-21)

DASS-21 is used to assess depression, anxiety, and stress, focusing on overall psychological stress levels. While total scores strongly correlate with depression and anxiety, the scale is less effective in distinguishing these states in adolescents. It consists of 21 items and takes about three to five minutes (Osman et al., 2012). DASS-21 generally measures psychological stress rather than isolating depression, anxiety, and stress specifically. In adolescent populations, the

boundaries between these emotions are often blurred, making DASS-21 more suited for general mental health assessment rather than specific evaluations in younger groups (Shaw et al., 2017).

For children and adolescents, the DASS-Y (Youth) version identifies symptoms effectively, with depressive symptoms linked to low positive affect, anxiety to physiological arousal, and stress to worry (Szabo & Lovibond, 2022). For those aged 60-74, DASS-21 enables accurate identification of generalized anxiety disorder and depression, with comparable results to other standard diagnostic tools (Gloster et al., 2008). However, the completion rate significantly decreases in those over 81, so using DASS-21 is recommended only up to age 80 (Wood et al., 2010).

Geriatric Depression Scale (GDS)

The GDS, in various forms, is a valuable tool for detecting depression in older adults. Studies show that all four forms—GDS-30, GDS-15, GDS-10, and GDS-4—have high sensitivity and specificity, with shorter forms (GDS-15 and GDS-10) offering the greatest diagnostic accuracy. While none of the forms can definitively confirm or exclude depression, they serve as effective screening tools (Krishnamoorthy et al., 2020). Completion of the GDS-30 takes 5-10 minutes, but time may be significantly longer for patients with cognitive impairments or concentration issues. The original version of the GDS comprises 30 items, with responses provided in a binary format (yes or no). The GDS is reliable when used alongside other diagnostic assessments. It is crucial to note that the scale considers various factors that contribute to the overall assessment. The scale takes into account the specific characteristics of depression in older adults, particularly the prevalence of multiple somatic symptoms that may not be directly related to depressive symptoms(Shin et al., 2019).

3.3. Self-assessment scales to evaluate postpartum depression

Edinburgh Postnatal Depression Scale (EPDS)

The EPDS is an effective, accurate tool for identifying women at high risk of postpartum depression within the first six months postpartum. Consisting of 10 questions with a maximum score of 30, a score of 10 or an affirmative response to self-harm warrants further evaluation for postpartum depression. Completion takes less than five minutes. The test is more effective than a routine clinical assessment in identifying mood disorders in postpartum women. It is

recommended for use in the standard care of postpartum women to enable early intervention (Evins et al., 2000).

However, the scale may be less accurate in culturally diverse populations without adequate translation and adaptation, which may result in the omission of important indicators of depression in non-Western settings. Furthermore, the EPDS focuses on symptoms of depression, and thus may not detect co-occurring disorders, such as anxiety or bipolar disorder, which can occur in postpartum patients. It is also essential to consider that the EPDS is a screening tool that necessitates further clinical evaluation for accurate diagnosis (Cox, 2019).

Postpartum Depression Screening Scale (PDSS)

The PDSS uses a 5-point Likert scale, with scores ranging from 35 to 175. A score of ≥80 indicates major depression, and the scale takes 5-10 minutes to complete. The PDSS is more effective in detecting postpartum depression than the EPDS or BDI-II, providing a more precise screening tool (Beck & Gable, 2001).

However, the PDSS may require specialist interpretation and demographic adjustments, as its specificity for postpartum experiences limits its utility in diagnosing depression at other life stages, such as pregnancy. Additionally, it may be impractical without follow-up resources for high scorers, especially in under-resourced settings (Pereira et al., 2011).

4. Discussion

Analysis of various depression assessment scales highlights the importance of selecting diagnostic tools suited to each patient's unique needs for precise diagnosis and effective treatment across life stages. The variety of depressive symptoms, from psychological to somatic, necessitates scales that can capture these nuances, particularly for patients with co-existing conditions, such as chronic pain or neurological disorders. Summary data of the scales are shown in Table 1.

The Beck Depression Inventory-II (BDI-II), though valued for its ease and speed, may yield inflated results in somatically ill patients, making the shorter BDI-FS version often more suitable for somatically focused cases. The Hamilton Depression Scale (HAM-D), despite its popularity and usefulness in antidepressant research, faces criticism for its outdated structure,

which can reduce its relevance for modern depressive profiles, particularly in patients with milder or atypical symptoms.

The Montgomery-Åsberg Depression Rating Scale (MADRS) stands out for its diagnostic accuracy, especially in moderate-to-severe cases, and its adaptability to various interview methods, making it suitable for patients with mobility limitations, including geriatric populations. Its robustness extends to patients with health complications, suggesting its versatility.

The Zung Self-Rating Depression Scale (SDS) is a widely used self-assessment tool designed to measure the level of depressive symptoms. While it is effective in identifying general depressive states and is easy for patients to complete, it may lack sensitivity in distinguishing between mild and moderate depression or in capturing changes over time. Thus, SDS is best suited for initial screening rather than in-depth diagnosis or monitoring of treatment progress.

The CES-D is a self-report scale developed to assess depressive symptoms in the general population. It is particularly sensitive to detecting symptoms of clinical depression and is widely used in both research and clinical settings. However, due to its focus on recent mood changes, it may be less suitable for diagnosing chronic or long-standing depressive disorders. CES-D is well-suited for large-scale epidemiological studies and initial screenings, especially within diverse population groups.

In recent years, increasing attention has been paid to the prevalence and characteristics of depression in athletic populations. Athletes may present with less typical affective symptoms and more somatic complaints, such as fatigue, irritability, or sleep disturbances, which may be mistaken for training-related effects. Therefore, the use of standardized diagnostic tools that minimize somatic symptom bias—such as the PHQ-9 or BDI-FS—may be more appropriate in this context. Moreover, scales that allow for rapid administration without clinical supervision are particularly valuable in sports medicine settings, where mental health screening is often embedded in broader performance evaluations.

While DASS-21 focuses on general psychological stress, it may be less effective at differentiating depression, anxiety, and stress in adolescents. As a result, it is better suited as a general screening tool, particularly for adults.

The Edinburgh Postnatal Depression Scale (EPDS) and the Postpartum Depression Screening Scale (PDSS) emphasize the importance of life-stage-specific tools, supporting early intervention in postpartum women. PDSS offers more detail than EPDS but requires specialized resources for high scorers.

Finally, the Geriatric Depression Scale (GDS) is effective for screening older adults, especially in its shorter versions, which facilitate use in this age group. However, GDS should be combined with other tools for a comprehensive evaluation.

5. Conclusion

The diversity of depression assessment scales enables a more precise approach to diagnosing and monitoring mood disorders based on patients' specific needs. Selecting diagnostic tools that consider age, health status, and clinical context enhances diagnostic accuracy and supports more effective therapeutic intervention. Integrating depression assessment scales with a patient-centered approach is crucial for optimizing treatment, highlighting the need for ongoing research to refine these tools for different population groups. Integrating depression assessment scales with a patient-centered approach is crucial for optimizing treatment, highlighting the need for ongoing research to refine these tools for different population groups, including competitive athletes who may require tailored screening approaches due to sport-specific psychological stressors.

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