INPLASY

The Clinical Utility of the Objective Measures for Diagnosing and Monitoring Attention Deficit and Hyperactivity Disorder (ADHD) in Adults: A Systematic Review

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 21 November 2025 and was last updated on 21 November 2025.

INTRODUCTION

Review question / Objective P (Population/Problem): Adults with and without Attention Deficit and Hyperactivity Disorder (ADHD). I (Intervention/Exposure): Objective diagnostic tools (e.g. functional brain scan, computerized tests, eye tracker test) to assess adults with ADHD. C (Comparison/Control): Adults without ADHD. O (Outcome): Sensitivity and specificity of an objective diagnostic tool.

Rationale Clinical practice suggests that objective assessment tools are needed to assess adults with inattention or hyperactivity, informed by the underlying pathophysiology of attention deficit and hyperactivity disorder (ADHD). This systematic review comprehensively evaluates the current objective assessment methods as an adjunct diagnostic tool for these adults.

Condition being studied Attention-deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder that was originally established as a diagnosis for children in the 1970s. But by the late 1990s, the existence of ADHD in adults due to the continuation of the disorder from childhood was discovered[Conrad P., Potter D. (2000). From Hyperactive Children to ADHD Adults: Observations on the Expansion of Medical Categories. Social Problems, 47(4), 559-582, https://doi.org/10.2307/3097135%5D. As such, the diagnosis of ADHD has become increasingly prevalent among adults, affecting approximately 2-3% of adults globally[Song, P., Zha, M., Yang, Q., Zhang, Y., Li, X., & Rudan, I. (2021). The prevalence of adult attention-deficit hyperactivity disorder: A global systematic review and meta-analysis. Journal of global health, 11, 04009. https://doi.org/10.7189/jogh.11.04009%5D. Adults who suffer from ADHD present with inattention, a tendency to make careless mistakes,

disorganization, distractibility, restlessness and impulsivity.

METHODS

Search strategy This study is compliant with the Preferred Reporting Items for Systematic Review and Meta-analyses (PRISMA) guidelines[Knobloch, K., Yoon, U., & Vogt, P. M. (2011). Preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement and publication bias. Journal of cranio-maxillo-facial surgery : official publication of the European Association for Cranio-Maxillo-Facial Surgery, 39(2), 91–92. https://doi.org/10.1016/j.jcms.2010.11.001%5D. The following databases, Web of Science, OVID (MedLINE, Embase, AMED, PsychInfo, JBI EBP), and PubMed will be used to systematically search for relevant articles from database inception to December 23, 2024. The search string applied for the systematic review included: ("Objective" OR "Test" OR "Diagnosis*" OR "Assess*" OR "Imaging*" OR "Spectroscopy") AND ("ADHD" OR "Attention deficit" OR "Hyperactivity"). Further searching, such as hand searching of article references, was also conducted.

Participant or population Adults with the clincal diagnosis of ADHD and healthy controls.

Intervention Not applicable.

Comparator Not applicable.

Study designs to be included Case-control studies will be included.

Eligibility criteria Inclusion criteria comprised: 1) publications in a peer-reviewed journal in English; 2) a study of any design focusing on the clinical use of any objective measures of activity in adults (age 18 and older); an Objective measure is defined as a result generated by a computerized assessment with minimal human interpretation of results; 3) at least a portion of participants in each study had to be either clinically diagnosed with ADHD or referred for ADHD assessment. The exclusion criteria comprised: 1) if participants were children or adolescents only; if a study contained both children and adult data, only adult data would be used for analysis; 2) lack of objective assessment tools; 3) analysis based on dataset and the research team did not recruit participants directly; 4) the paper focuses on the analysis method without potential for clinical application.

Information sources The following databases, Web of Science, OVID (MedLINE, Embase, AMED, PsychInfo, JBI EBP), and PubMed will be used to systematically search for relevant articles from database inception to December 23, 2024.

Main outcome(s) The diagnosis of ADHD or no ADHD based on objective tests.

Additional outcome(s) No additional outcome.

Data management The data are obtained from existing publications. We do not handle primary research data.

Quality assessment / Risk of bias analysis The quality assessment of observational cohort studies was conducted using the Quality Assessment for Observational Cohort and Cross-Sectional Studies by two independent authors, wherein all conflicts were resolved via discussion.

Strategy of data synthesis This is a systematic review and there is no analysis of data.

Subgroup analysis This is a systematic review and there is no analysis of data.

Sensitivity analysis This is a systematic review and there is no analysis of data.

Language restriction We chose to limit our search to only papers that were available in English, which may have excluded other relevant papers reported in different languages.

Country(ies) involved China - Faculty of Education, Huaibei Normal University, Huaibei, China.

Other relevant information This is a systematic review and we will include a study that meets our inclusion criteria regardless of the country of origin.

Keywords ADHD; objective diagnosis; Continuous Performance Tests; fNIRS.

Dissemination plans To submit to a peer reviewed journal for publication.

Contributions of each author

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