Conners’ Teacher Rating Scale has limited ability to predict DSM-IV ADHD in referred schoolchildren

QUESTION

**Question:** What is the predictive validity of the revised Conners’ Teacher Rating Scale (CTRS-R) for identifying children with attention deficit hyperactivity disorder (ADHD) in a clinical sample compared with the Telephone Teacher Interview (TTI-IV)?

**Patients:** 1038 children aged 6–12 years referred for assessment of attention, learning and behavioural problems to a paediatric clinic (mean age 8.8 years, 75.5% male). Children on psychotropic medications other than stimulants, attending full time treatment programmes, with premature birth, history of serious head trauma, a chronic medical condition, recent history of abuse or who were adopted were excluded.

**Setting:** Outpatient paediatric clinic, Toronto, Canada; May 1996–February 2006.

**Test:** The CTRS-R, a 59 item teacher report form used to identify children with ADHD and associated behavioural difficulties. This was given to teachers by parents and completed before clinical assessment. Three subscales (L, M and N) were used to identify DSM-IV subtypes (inattentive, hyperactive/impulsive and combined, respectively). Scores were converted to T scores, scaled for age and gender, and a score of 50 taken as the mean score for the population. A cut-off T score of ≥60 was used to detect the presence of ADHD subtypes; the effects of varying this cut-off were investigated.

**Diagnostic standard:** The TTI for DSM-IV or final clinical diagnosis. The TTI-IV is a semi-structured telephone interview used to obtain a teacher’s description of child behaviour in the classroom and schoolyard. The TTI-IV was measured before clinical assessment, and all interviewers and assessors had no knowledge of either test or diagnostic standard scores until all diagnostic measures and interviews were complete.

**Outcomes:** Sensitivity, specificity, positive and negative likelihood ratios, positive and negative post-test probabilities.

**METHODS**

**Design:** Cross-sectional study.

**Source of funding:** Canadian Institute for Health Research.

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In this methodologically sound paper, Charach and colleagues take on the interesting notion of streamlining clinical practice by testing whether one of the foremost clinical rating scales in the field, the Conners’ Teacher Rating Scale-Revised (CTRS-R), could be used to confidently establish a diagnosis of attention deficit hyperactivity disorder (ADHD). As a reference point and source of comparison, the authors established clinical diagnoses by using a semi-structured Teacher Telephone Interview (TTI-IV for DSM-IV). Although the paper focuses thoroughly on the psychometric outcomes of this comparison, the real underlying promise is the potential for the scale to be employed reliably in establishing a diagnosis of ADHD and thus letting health care providers refocus their time and efforts on other important aspects of patient care.

In this sample, the DSM-IV subscale of the CTRS-R, as a diagnostic instrument, was limited. As the authors explain, based on the comparisons, the CTRS-R was more effective at demonstrating that patients with low scores were less likely to be diagnosed with ADHD but high scores were less than optimally related to patients meeting complete criteria for ADHD on the TTI-IV diagnostic assessment.

ADHD is a complex neuropsychiatric disorder and clinicians need to be aware of the pitfalls of relying solely on any paper and pencil task to establish this diagnosis, although the authors never advocated this. Determination of ADHD’s existence in an individual relies on more than the presence or absence of symptoms. Clinicians in the field need to integrate important criteria such as age of onset and duration of symptoms which are often not incorporated into the questions included in rating scales but which nonetheless are vital to the establishment of an accurate diagnosis. More importantly, by definition, ADHD is a disorder that requires symptoms be identifiable in more than one setting, and diagnoses should not be established on the basis of observations from the vantage point of a single individual, even those as important as a teacher. True to the spirit of the paper, the use of rating scales such as the CTRS-R have their place in both research and clinical practice, especially if they organise and objectify important clinical information. To this end, the authors provided clarification that in this sample the use of this particular rating scale was limited for the purpose of diagnostic determination.

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**Competing interests:** None

**MAIN RESULTS**

Using the teacher reported diagnostic standard, 53.7% of children were classified as meeting DSM-IV criteria for ADHD, 13.9% for oppositional defiant disorder and 4% for conduct disorder. T scores of 60 or more (1 SD above the population mean) on all CTRS-R subscales showed good sensitivity but low specificity for detecting TTI-IV assessed inattentive symptoms (sensitivity 93%, specificity 39%), hyperactive–impulsive symptoms (sensitivity 91%, specificity 53%) and combined symptoms (sensitivity 94%, specificity 32%). For detecting clinical ADHD, sensitivities were also high for the inattentive subtype (sensitivity 85%, specificity 46%) and combined subtype (sensitivity 82%, specificity 48%) but lower for hyperactive–impulsive subtype (sensitivity 69%, specificity 60%). Increasing the cut-off value for the T score resulted in increased specificity for diagnosing ADHD subtypes with a maximum of 95% for a clinical diagnosis of the hyperactive–impulsive subtype but reduced sensitivity (18% for the hyperactive–impulsive subtype). Across subtypes, the highest post-test probabilities were achieved with a T score cut-off on the CTRS-R of ≥80 but all values were below 90%.

**CONCLUSIONS**

The ability of the CTRS-R is limited for predicting whether schoolchildren who are clinically referred will reach DSM-IV criteria for ADHD. A T score of less than 60 on the CTRS-R for the hyperactive–impulsive or combined subscales can be used to rule out ADHD but additional information about their behaviour will be needed to make DSM-IV diagnoses.

**ABSTRACTED FROM**


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Evid Based Mental Health 2010 13: 10
doi: 10.1136/ebmh.13.1.10

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