

also important to consider its impact on the child and the child's self esteem. In the absence of any biomarkers for ADHD, the diagnosis relies on accurate history using multiple sources of information, including parents, school and other caregivers. It is important to rule out significant hearing loss, language impairment or intellectual disability which in themselves can cause attentional problems and frustrations in a child and result in disruptive behaviour. A large number of rating scales – both paid and free – are currently available as screening tools for ADHD and its co-morbidities. Within the Western world, the diagnostic pathways rely on accurate information from the school teachers and school counsellors through formal reports and rating scales. These are combined with information from parents or carers during history taking or through more objective parent rating scales.

Frequent association with significant co-morbidities like learning difficulties, oppositional defiant disorder, conduct disorder, anxiety, mood disorders, depression and sleep disorders, can also aid in early recognition and

treatment of ADHD. Hence, the importance of accurately diagnosing the condition and intervening early cannot be overemphasized. Management may involve a combination of behavioral interventions, extra help with learning, and in some cases medications. We look forward to further validation studies on the use of the INCLIN Diagnostic Tool in the general Indian population, including children, preschoolers and adolescents.

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INDT-ADHD as a Diagnostic Tool for ADHD in Indian Children PEDIATRIC NEUROLOGIST'S PERSPECTIVE

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Attention deficit hyperactivity disorder (ADHD) is one of the most common neurodevelopmental disorders affecting approximately 5% of children and adolescents worldwide [1]. Core symptoms include age inappropriate inattentiveness, hyperactivity, and impulsivity [2]. Epidemiological studies from India have reported a prevalence of 1.7% in children under 14 years of age [3]. It is important to realize that ADHD persists into 50 to 80% of the affected, during adolescence [4], and the residual symptoms are noted in 18 to 30% of adults [5,6]. ADHD causes significant functional impairments, such as social and family life problems, poor education and school dropout, low self-esteem, impairment in emotional development, occupational problems, and divorce [2]. Unfortunately, the disorder is still poorly recognized and treated, especially in developing countries like India, and there is a lack of public policies

developed to address this condition. This could be due to low level of awareness and expertise among pediatricians and general practitioners in the community. Early detection and intervention is the need of the hour for reducing the burden of this disorder for the individuals, families, and the society.

While ADHD has attracted attention because of its high prevalence, it has attracted argument and controversy as a diagnostic entity because the construct of ADHD and its diagnostic criteria continue to evolve. Like most psychiatric disorders, the reliance on a set of criteria for ADHD – that require a subjective clinical judgment in different societies and cultures – has led to varied assessment of the prevalence and symptom presentations. It could also be due to the varied acceptance of externalizing behavioral traits by members of that socio-cultural group. In such scenarios, the properties of

diagnostic criteria do not perform identically across racial or cultural groups. Finally, when specific diagnostic criteria – that are needed to enhance the reliability, validity and utility of the construct across genders, age groups, different raters, settings and ethnic groups – are not available [7], the use of detailed and explicit appropriateness criteria would improve the diagnostic yield. This has been well documented in other medical disciplines [8].

In India the appropriateness of the construct, core and other symptoms of ADHD, using the available criteria, had not been documented. In this issue of *Indian Pediatrics*, INCLLEN has published the development and validation of a diagnostic tool for diagnosis of ADHD in Indian context – INCLLEN diagnostic tool for ADHD (INDT-ADHD) [9]. The authors conclude that this qualitatively-derived and theory-guided appropriateness criterion-based tool for diagnosing ADHD has high accuracy, adequate validity and internal consistency, and that it can be used for initial evaluation and assessment of post-intervention status in ADHD. However, it has limitation of being tested in tertiary-care hospitals where participants may not be representative of the children with ADHD in the general population. Therefore, using this study as the focus, further studies on community samples – to establish the sensitivity and specificity of this tool – are warranted. Secondly, although the sample size of 156 participants is adequate for an exploratory factor analysis, larger sample size can generate more stable factor structure models, thereby improving the confidence in the validity of identified constructs as well as provide more accurate estimates of sensitivity, specificity and predictive values. Inter-rater reliability and test-retest reliability were not assessed. Nevertheless, establishing the appropriateness of the diagnostic criteria in the Indian context enhances the possibility of accurate clinical diagnosis, and paves way to developing as well as validating new measures for ADHD in India.

The strengths of the study were its multicentric design, translation of the tool items forwards and backwards from regional languages to English using bilingual translators, and use of appropriate statistical methods. Backward and forward translation helps in maintaining conceptual, content, semantic, operational and functional equivalence of the items. This also enhances the applicability of the tool.

There is need for tools that have been validated in our population so that they can be used appropriately and correct diagnosis made. An early diagnosis can result in institution of appropriate behavior modification strategies and use of drugs so that we can improve the long term outcome of children with ADHD. This is important as ADHD individuals left untreated have poorer long-term outcomes compared to treated individuals. Benefits are more prominent in driving, obesity, self-esteem, social function, academic, and drug use/addictive behavior outcomes.

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