Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Psychiatry

Cross Cultural Adaptation and Psychometric Validation of the Attention-Deficit/Hyperactivity Disorder Rating Scale-5 (Parent Version) into Bangla

Dr. Parag Dey[1*], Prof. Dr. Nahid Mahjabin Morshed[2], Prof. Dr. Sultana Algin[2], Dr. Palash Nag[3], Dr. Sifat E Syed[4]

[1]Medical Officer, Psychiatry OPD, Chittagong Medical College Hospital, Chittagong, Bangladesh
[2]Professor, Department of Psychiatry, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh
[3]Jr. Consultant, Physical Medicine, 250 Bed General Hospital, Chittagong, Bangladesh
[4]Assistant Professor, Department of Psychiatry, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh

DOI: 10.36347/sjams.2024.v12i04.005 | **Received:** 18.02.2024 | **Accepted:** 23.03.2024 | **Published:** 05.04.2024

***Corresponding author:** Dr. Parag Dey
Medical Officer, Psychiatry OPD, Chittagong Medical College Hospital, Chittagong, Bangladesh

Abstract **Original Research Article**

Introduction: Attention-Deficit/Hyperactivity Disorder (ADHD) is a prevalent neurodevelopmental disorder in children and adolescents. Reliable and culturally appropriate assessment tools are crucial for accurate diagnosis and management. This study aimed to adapt and validate the ADHD Rating Scale-5 (Parent Version) into Bangla, assessing its psychometric properties in a Bangladeshi context. ***Methods:*** This cross-sectional study was conducted with 100 participants from urban areas and nuclear families. The scale underwent a rigorous translation and cultural adaptation process, following a six-step methodological approach. The study evaluated the scale's internal consistency, content validity, and construct validity through Cronbach's alpha, Content Validity Index (CVI), and factor analysis, respectively. ***Result:*** The ADHD-RS-5 Bangla Parent Version demonstrated high internal consistency (Cronbach's alpha = 0.89) and good reliability in the Inattention (alpha = 0.858) and Hyperactivity-Impulsivity (alpha = 0.818) subdomains. Content validity was confirmed with high Item-CVI scores and a Scale-level CVI of 0.962. Confirmatory factor analysis supported the two-factor structure of the scale, and exploratory factor analysis identified three components, explaining 71.1% of the variance. ***Conclusion:*** The ADHD-RS-5 Bangla Parent Version is a reliable and valid tool for assessing ADHD symptoms in Bangla-speaking children. Its strong psychometric properties make it suitable for clinical and research use in Bangladesh. This study contributes to the development of culturally sensitive assessment tools for ADHD, enhancing the understanding and management of the disorder in diverse populations.

Keywords: ADHD, Rating Scale, Psychometric Validation, Cross-Cultural Adaptation, Bangla.

INTRODUCTION

Attention-Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by symptoms of hyperactivity, impulsivity, and/or inattention, which are developmentally inappropriate [1]. As one of the most common disorders among children and adolescents presenting to psychiatric services, ADHD's global prevalence in those aged 18 and under is approximately 7.2% [2, 3]. In Bangladesh, ADHD prevalence ranges from 1 to 3.1%, as indicated by several epidemiological studies [4-6]. The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), classifies ADHD as a neurodevelopmental disorder, typically manifesting before school age [7, 8]. Children with ADHD often struggle with task prioritization and bodily control, leading to significant impacts on their relationships, academic performance, and behavior in school [9, 10]. The DSM-5 outlines specific diagnostic criteria for ADHD, focusing on patterns of inattention and/or hyperactivity-impulsivity that significantly impair functioning or development [11]. These criteria include detailed symptom lists for inattention and hyperactivity-impulsivity, with a requirement for symptoms to be present in multiple settings and to have appeared before age 12. Over the past three decades, the diagnostic criteria for ADHD have evolved significantly. Initially viewed as a single dimension of hyperactivity and inattention in the 1960s and 1970s, the disorder was later conceptualized as a tripartite model of inattention, impulsivity, and hyperactivity [12]. Subsequent empirical investigations led to a unitary dimension model in DSM-III-R, and later, DSM-IV and DSM-5 established a two-dimensional model, separating inattention from hyperactivity and impulsivity [7, 13]. Research has consistently supported this two-factor model of ADHD symptoms [14, 15]. The primary goal in treating ADHD is to reduce symptoms and improve functionality, well-

being, and social interactions [16]. However, measuring treatment response can be challenging, particularly in terms of its impact on quality of life [17]. Various instruments, including short self-reported questionnaires, are used to assess and monitor treatment effects, covering functioning, social, and environmental contexts [18]. A comprehensive evaluation of ADHD typically involves multiple components, such as diagnostic interviews, behavior rating scales, direct observations, and clinic-based testing [15]. However, few instruments directly adapt items from the DSM-5 criteria for ADHD.

The Attention-Deficit/Hyperactivity Disorder Rating Scale-5 (ADHD-RS-5) is designed to closely reflect the DSM-5 criteria for ADHD while maintaining brevity. It assesses the frequency and severity of ADHD symptoms and impairments, applicable for ages 5 to 17 years, with both parent and teacher report versions. The scale uses a 4-point Likert scale and includes adapted descriptions of ADHD symptoms based on DSM-5 wording [19, 20]. Parents and teachers rate the frequency of symptoms based on the child's behavior over the previous six months, in line with DSM-5 guidelines. Given the prevalence of ADHD and the need for effective screening and monitoring tools in various treatment settings, our study aimed to create a Bangla version of the ADHD-RS-5. This version would provide clinicians with a method to obtain parent and teacher ratings regarding the frequency of each of the symptoms of ADHD based on DSM-5 criteria. The importance of such a tool is underscored by the impact of ADHD on children, adolescents, and their families, affecting their quality of life. Yet, in Bangladesh, there are no validated tools for screening and monitoring ADHD patients. The ADHD-RS-5 has been translated and validated into numerous languages, exhibiting excellent psychometric characteristics. The ADHD-RS-5 is a brief, easy-to-use tool for both self and physician-administered assessments. It is also suitable for use by other healthcare providers, such as community health workers, which is particularly relevant given the scarcity of physicians in Bangladesh. This tool could facilitate the identification of individuals in need of treatment and aid future research in the field of ADHD. Epidemiological studies using this tool could inform policy formulation, planning, and resource allocation, addressing a critical gap in the understanding and management of ADHD in Bangladesh.

METHODS

This cross-sectional validation study was conducted from January 2021 to March 2022 at the Department of Psychiatry, Bangabandhu Sheikh Mujib Medical University (BSMMU), a tertiary level hospital with a well-established psychiatric department. The study population comprised parents of children aged 5-17 years diagnosed with ADHD, attending the Outpatient Department and ADHD Clinic at BSMMU. A purposive sampling method was employed, excluding parents who were mute or non-communicable. The sample size was determined based on an item-to-sample ratio of 1:5, resulting in 100 parents after accounting for potential missing data. Data collection involved a semi-structured questionnaire to gather socio-demographic information and the Bangla version of the ADHD Rating Scale-5 (Parent Version). This scale, reflecting DSM-5 criteria, assesses symptom frequency and severity over the previous six months. The study also included a confirmatory factor analysis, yielding a Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) of 0.975, and a Root Mean Square Error of Approximation (RMSEA) value of 0.066, supporting a two-factor model. Ethical considerations were rigorously followed, with approval from the Institutional Review Board of BSMMU and informed consent obtained from all participants. Data were processed and analyzed using SPSS version 26, focusing on descriptive analysis and psychometric parameters of the ADHD-RS-5. This included assessments of internal consistency (Cronbach's alpha), face validity (review by experts), content validity (content validity index), and construct validity (confirmatory and exploratory factor analysis).

RESULTS

Table 1: Distribution of sociodemographic characteristics among the participants (N=100)

Characteristic	Frequency (n)	Percentage (%)
Age(year) (mean ± SD)	33.11±5.45	
Relationship with the child		
Father	24	24
Mother	76	76
Education		
No education and primary	7	7
Secondary	19	19
Higher secondary	18	18
Honors and higher	56	56
Occupation		
Housewife	38	38

Characteristic	Frequency (n)	Percentage (%)
Farming	1	1
Business	17	17
Service	44	44
Family type		
Nuclear	53	53
Extended	47	47
Residence		
Urban	80	80
Rural	20	20
Religion		
Islam	81	81
Hinduism	16	16
Others	3	3
Marital state		
Married	98	98
Separated	2	2

The average age of the participants was 33.11 years, with a standard deviation of 5.45 years. A majority of the respondents (76%) were mothers, while fathers constituted 24% of the sample. In terms of educational background, the majority (56%) had honors or higher education. Secondary and higher secondary education levels were reported by 19% and 18% of the participants, respectively, while 7% had no education or only primary education. Regarding occupation, 44% were engaged in service, 38% were housewives, 17% were involved in business, and 1% in farming. The family type of the participants was almost evenly split, with 53% living in nuclear families and 47% in extended families. A significant majority of the participants (80%) resided in urban areas, while 20% were from rural areas. The predominant religion among the participants was Islam (81%), followed by Hinduism (16%), and other religions (3%). The vast majority of the participants (98%) were married, with only 2% being separated.

Table 2: Combined Characteristics and Reliability of ADHD-RS-5 Bangla Parent Version

Item	Mean	SD	Correlation coefficient with total score	Cronbach's alpha if item deleted
IA1	2.39	0.88	0.329	0.858
IA2	1.76	0.94	0.35	0.871
IA3	1.83	1.09	0.314	0.869
IA4	1.84	1.16	0.258	0.871
IA5	1.89	1.17	0.322	0.865
IA6	2.04	1.09	0.227	0.87
IA7	1.82	1.17	0.065	0.897
IA8	2	1.14	0.411	0.877
IA9	2.1	1.16	0.19	0.87
HI1	2.23	0.99	0.281	0.882
HI2	1.82	0.95	0.364	0.876
HI3	1.76	1.13	0.453	0.895
HI4	1.6	1.11	0.385	0.868
HI5	1.71	1.11	0.375	0.886
HI6	1.84	1.06	0.465	0.883
HI7	1.89	1.06	0.202	0.815
HI8	1.9	1.04	0.469	0.854
HI9	2.28	1.03	0.215	0.817

IA-Inattention subdomain items; HI-Hyperactivity-impulsivity subdomain items

Table 2 details the combined characteristics and reliability of the ADHD-RS-5 Bangla Parent Version, based on the responses of the study participants. The table breaks down the mean scores, standard deviations (SD), correlation coefficients with the total score, and Cronbach's alpha values if an item were deleted, for each item on the scale. For the Inattention (IA) subdomain items, the mean scores ranged from 1.76 (IA2) to 2.39 (IA1), with standard deviations varying between 0.88 (IA1) and 1.17 (IA5, IA7). The correlation coefficients with the total score for these items were mostly moderate, with IA8 showing the highest correlation at

0.411. The Cronbach's alpha values if an item were deleted indicated that the removal of any single item would not significantly improve the scale's internal consistency, with values ranging from 0.858 (IA1) to 0.897 (IA7). Similarly, for the Hyperactivity-Impulsivity (HI) subdomain items, the mean scores varied from 1.6 (HI4) to 2.28 (HI9), and standard deviations ranged from 0.95 (HI2) to 1.13 (HI3). The correlation coefficients for these items also showed moderate relationships with the total score, with HI8 demonstrating the highest correlation at 0.469. The Cronbach's alpha values if an item were deleted for the HI items were consistent, suggesting that the scale's reliability would not be substantially affected by the exclusion of any individual item, with values ranging from 0.815 (HI7) to 0.883 (HI6).

Table 3: Internal consistency of ADHD-RS-5 Bangla Parent version

Reliability statistics		
Cronbach's alpha		
Overall	**Inattention domain**	**Hyperactivity-impulsivity domain**
0.89	0.858	0.818

Table 3 presents the internal consistency of the ADHD-RS-5 Bangla Parent Version, as measured by Cronbach's alpha. The overall Cronbach's alpha for the entire scale is 0.89, indicating a high level of internal consistency. This suggests that the items on the scale are reliably measuring the intended construct of ADHD symptoms in children, as reported by their parents. For the subdomains, the Inattention domain has a Cronbach's alpha of 0.858, while the Hyperactivity-Impulsivity domain has a slightly lower alpha of 0.818. Both of these values are within the acceptable range for psychological scales, indicating that each subdomain independently exhibits good internal consistency. The slightly lower alpha value for the Hyperactivity-Impulsivity domain suggests a bit more variability in responses for this subdomain compared to the Inattention domain, but it still represents a reliable measure.

Table 4: Content validity of ADHD-RS-6 Bangla parent version

Item	**Number of very relevant response**	**Item-CVI**
IA1	6	1
IA2	6	1
IA3	6	1
IA4	6	1
IA5	6	1
IA6	5	0.83
I67	6	1
IA8	6	1
IA9	5	0.83
HI1	6	1
HI2	6	1
HI3	6	1
HI4	6	1
HI5	6	1
HI6	5	0.83
HI7	6	1
HI8	6	1
HI9	5	0.83

IA-Inattention subdomain items; HI-Hyperactivity-impulsivity subdomain items; CVI-Content Validity Index

Table 4 outlines the content validity of the ADHD-RS-6 Bangla Parent Version, focusing on the Content Validity Index (CVI) for each item on the scale. The table lists each item on the ADHD-RS-5 scale, along with the number of experts who rated the item as 'highly relevant' and the corresponding Item-CVI. The scale items are divided into two subdomains: Inattention (IA) and Hyperactivity-Impulsivity (HI). For most items across both subdomains, all six experts rated them as 'highly relevant,' resulting in an Item-CVI of 1. This unanimous agreement among experts underscores the strong relevance of these items in the context of ADHD assessment in Bangla-speaking populations.

However, for items IA6, IA9, HI6, and HI9, one expert did not rate them as 'highly relevant,' leading to a slightly lower Item-CVI of 0.83 for each of these items. Despite this, the Item-CVI values for all items are above the commonly accepted threshold of 0.79, indicating that the items are considered adequately relevant by the experts.

The Scale-level Content Validity Index (S-CVI), calculated as the average of the I-CVIs, is 0.962. This high S-CVI value indicates excellent content validity for the ADHD-RS-5 Bangla Parent Version as a whole. It suggests that the scale is well-constructed and appropriate for assessing ADHD symptoms in Bangla-speaking children, as perceived by their parents.

Table 5: Goodness of fit indicators of ADHD-RS-5 Bangla parent version

ADHD-RS-5 Bangla	Chi-square	df	P	Chi-square/df	RMSEA	CFI	TLI
Full scale (two factor)	413.8	134	0.015	3.08	0.039	0.911	0.901
IA domain (single factor)	108.3	27	0.005	4.01	0.091	0.966	0.951
HI domain (single factor)	133.67	27	0.013	4.21	0	1	1

IA-Inattention subdomain items; HI-Hyperactivity-impulsivity subdomain items; CVI-Comparative Fit Index; RMSEA-Root Mean Square Error of Approximation; TLI- Tucker-Lewis Index

The table 5 reports several key statistics for the full scale and its two subdomains (Inattention and Hyperactivity-Impulsivity): Chi-square, degrees of freedom (df), p-value, Chi-square/df ratio, Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Tucker Lewis Index (TLI). For the full scale, which is modeled as a two-factor construct (inattention and hyperactivity-impulsivity), the Chi-square value is 413.8 with 134 degrees of freedom and a p-value of 0.015. The Chi-square/df ratio is 3.08, and the RMSEA value is 0.039. Both the CFI and TLI values are above 0.90, standing at 0.911 and 0.901, respectively. These indicators suggest a good fit of the proposed two-factor model to the data, with RMSEA below the 0.05 threshold indicating a close fit, and CFI and TLI values above 0.90 reflecting acceptable model fit. For the Inattention domain, analyzed as a single-factor model, the Chi-square value is 108.30 with 27 degrees of freedom, resulting in a Chi-square/df ratio of 4.01 and an RMSEA of 0.091. The CFI and TLI values are 0.966 and 0.951, respectively. Similarly, the Hyperactivity-Impulsivity domain, also modeled as a single factor, shows a Chi-square value of 133.67 with 27 degrees of freedom, a Chi-square/df ratio of 4.21, and an RMSEA of 0.000. The CFI and TLI values for this domain are both 1.00. These results indicate that each subdomain also fits well as individual constructs, with CFI and TLI values exceeding the 0.90 benchmark.

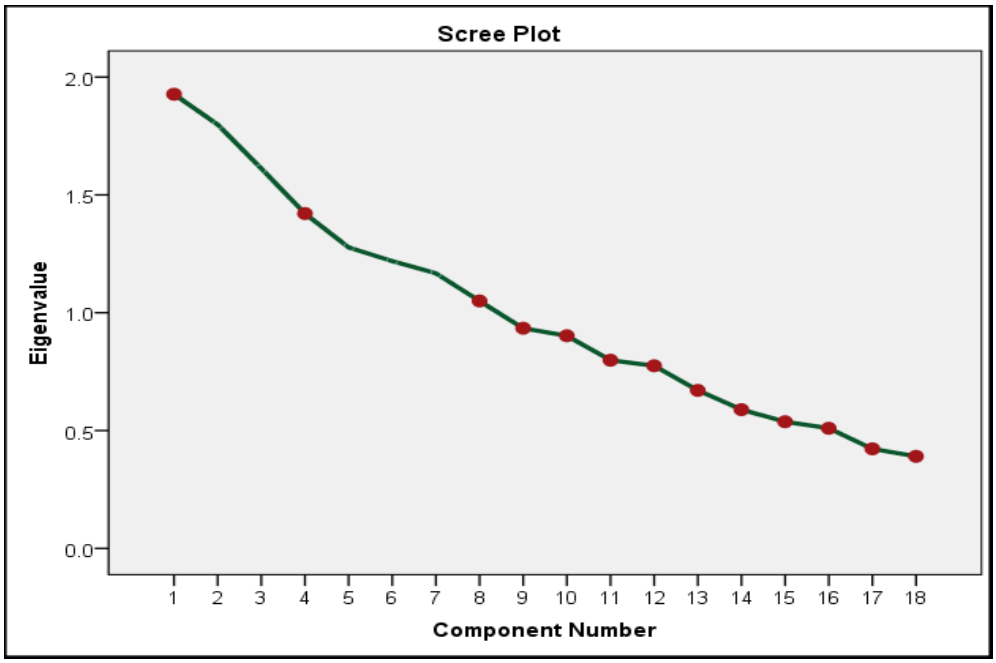

Figure 1: Scree plot analysis of ADHD-RS-5 Bangla (parent version)

Exploratory factor analysis by principal component analysis with varimax rotation identified three components with eigenvalues of more than 1 (one). These three components in total explained 71.1% of the variance. In the following figure we can see the scree plot and three components having eigenvalues of more than 1.

DISCUSSION

Translating an instrument from one language to another, while seemingly straightforward, does not automatically ensure its utility for the target population.

As Gudmundsson (2009) pointed out, "A translated version of a test cannot be assumed to have the same psychometric qualities as a standardized version in the primary language" [21]. This highlights the challenge of structuring the translation and validation process to ensure that the resulting instrument is not only psychometrically sound but also culturally appropriate. In our study, we employed a six-step methodological approach, often referred to as the "serial approach to translation," as developed by Herrera, DelCampo, and Ames, and described by Beaton *et al.,* [22, 23]. This approach integrates cultural adaptation within the instrument translation process, aiming to produce linguistically and culturally accurate instruments. Two translators independently developed versions of the instrument, considering both language and culture, and then collaborated to create the most accurate version. Their expertise in mental health evaluations and experience with children with ADHD and their parents were crucial in this process. Following synthesis, back translation was conducted to check for inconsistencies with the original version, and the translated version was pretested. This rigorous adaptation process adhered to well-established international standards, as recommended by Beaton *et al.,* [23]. Building on this foundation, our study's participant demographic, predominantly mothers (76%) with a significant portion having higher education (56%), and a majority engaged in service occupations (44%), residing mostly in urban areas (80%) and nuclear families (53%), offers a unique perspective on ADHD in the Bangladeshi context. This demographic profile aligns with Alam *et al.,* which examined ADHD among entrepreneurs in Bangladesh, suggesting a broad relevance of ADHD concerns across diverse societal strata [24]. However, contrasting studies like Eapen *et al.,* in the UAE and Umar *et al.,* in Nigeria indicate that sociodemographic factors influencing ADHD can vary significantly across cultures [25, 26]. These differences underscore the necessity for culturally tailored assessment tools in ADHD research, a point further emphasized by the diverse sociodemographic backgrounds observed in ADHD studies globally. The high internal consistency of the ADHD-RS-5 Bangla Parent Version, with an overall Cronbach's alpha of 0.89, aligns with findings from Adler *et al.,* (2005) [4], who reported substantial reliability in ADHD assessments for adults [27]. This consistency is crucial, as it underpins the scale's reliability across different demographic groups. DuPaul's research further corroborates the reliability of ADHD rating scales, reinforcing the importance of consistent and reliable measurement tools in the field of ADHD assessment [28]. The resemblance of these findings with our study highlights the ADHD-RS-5 Bangla Parent Version's potential as a reliable tool for assessing ADHD symptoms in Bangla-speaking children. The meaningful contribution of each item on the scale to its overall reliability, evidenced by moderate correlation coefficients with the total score, is a critical aspect of the scale's design. This finding is in line with the approach taken by Du *et al.,* in developing a multi-dimensional ADHD scale, where item relevance and internal consistency were key considerations [29]. The robust item analysis in our study not only reinforces the scale's internal consistency but also its comprehensive nature in capturing the nuances of ADHD symptoms. The excellent content validity of our scale, as indicated by high Item-CVI scores and a Scale-level Content Validity Index (S-CVI) of 0.962, resonates with the emphasis on content validity in ADHD rating scales by Collett *et al.,* and DuPaul's study [28, 30]. The strong expert agreement on the relevance of the scale's items for measuring ADHD symptoms affirms its suitability and applicability in the Bangladeshi context, a crucial factor considering the cultural specificity of symptom presentation in ADHD. The support for the two-factor structure of the scale through confirmatory factor analysis, with good model fit indicators, is a significant finding. This aspect of our study finds support in the work of Smyth and Meier, who discussed the complexities in constructing reliable and valid measures of ADHD, particularly in terms of construct validity [31]. The exploratory factor analysis in our study, identifying three components explaining 71.1% of the variance, further validates the scale's multidimensional nature. This finding is in line with the recent study by Grandjean *et al.,* which emphasized the precision of behavioral rating scales in ADHD assessment [32]. In conclusion, the ADHD-RS-5 Bangla Parent Version emerges from our study as a robust, reliable, and valid tool for assessing ADHD symptoms in Bangla-speaking children. The scale's strong alignment with existing literature on ADHD assessment tools across various cultural contexts underscores its potential utility in clinical and research settings. The congruence and discrepancies observed in comparison with other studies not only validate our findings but also highlight the ongoing need for culturally sensitive and context-specific tools in ADHD research and practice.

Limitations of the Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSION

The current study successfully adapted and validated the ADHD-RS-5 into Bangla, providing a reliable and culturally appropriate tool for assessing ADHD symptoms in Bangla-speaking children. The study's rigorous methodology, including a comprehensive translation and adaptation process, ensured the scale's linguistic and cultural accuracy. The ADHD-RS-5 Bangla Parent Version demonstrated high internal consistency, robust content validity, and strong construct validity, as evidenced by its psychometric

properties. These findings highlight the scale's potential as an effective instrument for clinical and research purposes in Bangladesh. The study also underscores the importance of culturally sensitive tools in ADHD assessment, contributing to the broader understanding and management of ADHD in diverse populations. This work paves the way for future research and clinical interventions tailored to the unique needs of the Bangladeshi population, ultimately aiding in the effective diagnosis and treatment of ADHD.

Funding: No funding sources.

Conflict of Interest: None declared.

Ethical Approval: The study was approved by the Institutional Ethics Committee.

REFERENCES

1. Frank-Briggs, A. I. (2011). Attention deficit hyperactivity disorder (ADHD). *Journal of Pediatric Neurology*, *09*(3), 291–8.
2. Polanczyk, G., de Lima, M. S., Horta, B. L., Biederman, J., & Rohde, L. A. (2007). The Worldwide Prevalence of ADHD: A Systematic Review and Metaregression Analysis. *AJP*, *164*(6), 942–8.
3. Thomas, R., Sanders, S., Doust, J., Beller, E., & Glasziou, P. (2015). Prevalence of Attention-Deficit/Hyperactivity Disorder: A Systematic Review and Meta-analysis. *Pediatrics*, *135*(4), e994–1001.
4. Islam, Z., Rahman, M., Olive, A. H., & Hasan, M. (2022). Prevalence rate of attention deficit hyperactivity disorder (ADHD) and computer vision syndrome (CVS) symptoms predisposition among digital device users of Bangladesh. *Middle East Current Psychiatry*, *29*(1), 6.
5. Mullick, M. S. I., & Goodman, R. (2005). The prevalence of psychiatric disorders among 5–10 year olds in rural, urban and slum areas in Bangladesh. *Soc Psychiat Epidemiol*, *40*(8), 663–71.
6. Rabbani, A., & Alexander, G. C. (2009). Impact of Family Structure on Stimulant Use among Children with Attention-Deficit/Hyperactivity Disorder. *Health Services Research*, *44*(6), 2060–78.
7. Guze, S. B. (1995). Diagnostic and Statistical Manual of Mental Disorders, 4th ed. (DSM-IV). *AJP*, *152*(8), 1228–1228.
8. Felt, B. T., Biermann, B., Christner, J. G., Kochhar, P., & Harrison, R. V. (2014). Diagnosis and Management of ADHD in Children. *AFP*, *90*(7), 456–64.
9. Artigas Pallarés, J. (2003). Comorbilidad en el trastorno por déficit de atención/hiperactividad. *Rev. Neurol.*, *36*(S1), 68.
10. Wilens, T. E., & Spencer, T. J. (2010). Understanding Attention-Deficit/Hyperactivity Disorder from Childhood to Adulthood. *Postgrad Med*, *122*(5), 97–109.
11. Gintner, G. G., & Mooney, P. (2015). Attention to ADHD: DSM-5 Changes, Practice Guideline Updates and Implications for Schools. *Beyond Behavior*, *24*(2), 20–9.
12. Kendell, R. E. (1988). Diagnostic and Statistical Manual of Mental Disorders, 3rd ed., revised (DSM-III-R). *AJP*, *145*(10), 1301–2.
13. Vahia, V. N. (2013). Diagnostic and statistical manual of mental disorders 5: A quick glance. *Indian J Psychiatry*, *55*(3), 220–3.
14. Bauermeister, J. J., Bird, H. R., Canino, G., Rubio-Stipec, M., Bravo, M., & Alegría, M. (1995). Dimensions of attention deficit hyperactivity disorder: Findings from teacher and parent reports in a community sample. *Journal of Clinical Child Psychology*, *24*(3), 264-271. [cited 2024 Mar 14]; Available from: https://www.tandfonline.com/doi/abs/10.1207/s15374424jccp2403_3
15. DuPaul, G. J., Power, T. J., Anastopoulos, A. D., & Reid, R. (1998). ADHD Rating Scale—IV: Checklists, norms, and clinical interpretation. New York, NY, US: The Guilford Press; viii, 79 p. (ADHD Rating Scale—IV: Checklists, norms, and clinical interpretation).
16. Markowitz, J. T., Oberdhan, D., Ciesluk, A., Rams, A., & Wigal, S. B. (2020). Review of Clinical Outcome Assessments in Pediatric Attention-Deficit/Hyperactivity Disorder. *Neuropsychiatric Disease and Treatment*, *16*, 1619–43.
17. Danckaerts, M., Sonuga-Barke, E. J., Banaschewski, T., Buitelaar, J., Döpfner, M., Hollis, C., ... & Coghill, D. (2010). The quality of life of children with attention deficit/hyperactivity disorder: a systematic review. *European child & adolescent psychiatry*, *19*(2), 83-105.
18. Wills, T. A., Ainette, M. G., Mendoza, D., Gibbons, F. X., & Brody, G. H. (2007). Self-control, symptomatology, and substance use precursors: Test of a theoretical model in a community sample of 9-year-old children. *Psychology of Addictive Behaviors*, *21*(2), 205–15.
19. Alhossein, A., Abaoud, A. A., Becker, D., Aldabas, R., Bakhiet, S. F., & Al Jaffal, M. (2022). Psychometric properties of ADHD rating scale—5 for children and adolescents in Sudan—school version. *Frontiers in Psychology*, *13*, 883578.
20. Nasser, A., Kosheleff, A. R., Hull, J. T., Liranso, T., Qin, P., Busse, G. D., ... & Rubin, J. (2021). Translating attention-deficit/hyperactivity disorder rating scale-5 and Weiss functional impairment rating scale-parent effectiveness scores into clinical global impressions clinical significance levels in four randomized clinical trials of SPN-812 (viloxazine extended-release) in children and adolescents with attention-deficit/hyperactivity

disorder. *Journal of Child and Adolescent Psychopharmacology*, *31*(3), 214-226.
21. Gudmundsson, E. (2009). Guidelines for translating and adapting psychological instruments. *Nordic Psychology*, *61*(2), 29–45.
22. Herrera, R. S., DelCampo, R. L., & Ames, M. H. (1993). A Serial Approach for Translating Family Science Instrumentation. *Family Relations*, *42*(3), 357–60.
23. Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2000). Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine (Phila Pa 1976)*, *25*(24), 3186–91.
24. Alam, M., Nabi, Md. N. U., Rahman, S. M., & Rahman, M. (2008). Identifying Attention Deficit Hyperactivity Disorder (ADHD) Among the Entrepreneurs of Bangladesh - A Case Study on Khulna City. *Khulna University Business Review*, 83–90.
25. Eapen, V., Jakka, M. E., & Abou-Saleh, M. T. (2003). Children with psychiatric disorders: the A1 Ain Community Psychiatric Survey. *Can J Psychiatry*, *48*(6), 402–7.
26. Umar, M. U., Obindo, J. T., & Omigbodun, O. O. (2018). Prevalence and Correlates of ADHD Among Adolescent Students in Nigeria. *J Atten Disord*, *22*(2), 116–26.
27. Adler, L. A., Spencer, T., Faraone, S. V., Reimherr, F. W., Kelsey, D., Michelson, D., & Biederman, J. (2005). Training raters to assess adult ADHD: reliability of ratings. *Journal of Attention Disorders*, *8*(3), 121-126.
28. DuPaul, G. J. (1991). Parent and Teacher Ratings of ADHD Symptoms: Psychometric Properties in a Community-Based Sample. *Journal of Clinical Child Psychology*, *20*(3), 245–53.
29. Du, Y., Kou, J., & Coghill, D. (2008). The validity, reliability and normative scores of the parent, teacher and self report versions of the Strengths and Difficulties Questionnaire in China. *Child Adolesc Psychiatry Ment Health*, *2*(1), 8.
30. Collett, B. R., Ohan, J. L., & Myers, K. M. (2003). Ten-year review of rating scales. V: scales assessing attention-deficit/hyperactivity disorder. *J Am Acad Child Adolesc Psychiatry*, *42*(9), 1015–37.
31. Smyth, A. C., & Meier, S. T. (2019). Evaluating the Psychometric Properties of the Conners Adult ADHD Rating Scales. *J Atten Disord*, *23*(10), 1111–8.
32. Grandjean, M., Hochman, S., Mukherjee, R., & Kadosh, R. C. (2023). A review of behavioural rating scales for the assessment of Attention Deficit/Hyperactivity Disorder among adults: Efficacy, best practices, and research recommendations [Internet]. *medRxiv*; 2023 [cited 2024 Mar 15]. p. 2023.05.30.23290708. Available from: https://www.medrxiv.org/content/10.1101/2023.05.30.23290708v1