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ORIGINAL ARTICLE

Validation of the Brazilian version of the “pediatric obstructive sleep apnea screening tool” questionnaire ☆,☆☆

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KEYWORDS

Questionnaire;
Sleep-disordered
breathing;
Pediatrics;
Validation

Abstract

Objective: To validate the pediatric obstructive sleep apnea screening tool (PosaST) for use in Brazil.

Materials and methods: The Brazilian version of this questionnaire, originally validated and tested in the United States, was developed as follows: (a) translation; (b) back-translation; (c) completion of the final version; (d) pre-testing. The questionnaire was applied prior to polysomnography to children aged 3–9 years from October 2015 to October 2016, and its psychometric properties (*i.e.*, validity and reliability) were evaluated. PosaST accuracy was assessed from comparisons between polysomnographic results and corresponding PosaST scores.

Results: Sixty patients were enrolled, and based on polysomnographic findings, 48% patients had normal apnea-hypopnea index (AHI), while the remaining 52% met the criteria for obstructive sleep apnea (OSA). Minimum O₂ saturation level was significantly lower among OSA children ($p=0.021$). Satisfactory concordance was found between individual AHI and PosaST scores. Bland–Altman plot-derived bias was 0.1 for the difference between measures, with 5.34 (95% CI: 4.14–6.55) and –5.19 (95%CI: –6.39 to –3.98) for the upper and lower agreement range. PosaST internal consistency derived from Cronbach’s alpha was 0.84 (95%CI: 0.78–0.90).

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☆☆ Study conducted at Postgraduate Program in Pediatrics and Child Health, Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS), Porto Alegre, RS, Brazil.

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57**PALAVRAS-CHAVE**Questionário;
Distúrbios
respiratórios do sono;
Pediatria;
Validação

Conclusion: The PosaST was translated to and validated into Brazilian-Portuguese version, and showed good reliability and concordance with AHI. This questionnaire offers a reliable screening option for sleep-disordered breathing in children.

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Validação da versão brasileira do questionário “ferramenta de triagem de apneia obstrutiva do sono em pediatria”**Resumo**

Objetivo: Validar o questionário *Pediatric obstructive sleep apnea screening tool* (PosaST) para o seu uso no Brasil.

Materiais e métodos: A versão brasileira desse questionário, originalmente validado e testado nos Estados Unidos, foi desenvolvida a partir das seguintes etapas: a) tradução; b) retro-tradução; c) conclusão da versão final; d) pré-teste. O questionário foi aplicado previamente ao início da polissonografia em crianças de 3 a 9 anos de idade, que foram incluídas no estudo no período de outubro de 2015 a outubro de 2016. As propriedades psicométricas avaliadas foram validade e confiabilidade. A acurácia foi avaliada pela comparação entre os resultados da polissonografia com o escore do questionário.

Resultados: 60 pacientes foram incluídos no estudo. Conforme a polissonografia, 48% dos pacientes apresentaram índices de apneia e hipopneia (IAH) normais e 51% apresentaram resultados alterados. A SpO₂ mínima foi significativamente menor ($p = 0,021$) nas crianças com diagnóstico de síndrome de apneia obstrutiva do sono. O IAH apresentou concordância satisfatória com os resultados do questionário. O viés médio de Bland-Altman foi de 0,1 para a diferença entre as medidas, com um limite superior de 5,34 (IC95%4,14 a 6,55) e um limite inferior de -5,19 (IC95%-6,39 a -3,98). A consistência interna do questionário avaliada pelo α de Cronbach foi de 0,84 (IC95%0,78 a 0,90).

Conclusão: O PosaST foi traduzido e validado adequadamente para a versão em português brasileiro, apresentando boa confiabilidade e concordância com o IAH. Esse questionário oferece uma opção confiável de triagem de distúrbios respiratórios do sono em crianças.

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Introduction

Sleep-disordered breathing (SDB) encompass a set of altered respiratory patterns during sleep that include primary snoring, upper airway resistance syndrome, and obstructive sleep apnea syndrome (OSAS).¹ The prevalence of SDB is estimated at around 4–11% in the pediatric population.² The main risk factor for the development of this pathology is adenotonsillar hypertrophy.³

SDB diagnosis and referral to treatment aim to minimize associated morbidities, mainly cardiological,⁴ cognitive,⁵ and metabolic dysfunctions.⁶ The American Academy of Pediatrics recommends the performance of night polysomnography (PSG) in the laboratory as the standard gold test for the diagnosis of OSAS in children with clinical manifestations of SDB.^{7,8} However, in countries where access to PSG is precarious, the evaluations performed from questionnaires become of great clinical importance, with a low operational cost.^{9,10}

Currently, in Brazil there are five validated questionnaires for evaluation of sleep disorders in pediatrics,^{11–15} and only one¹⁵ has a specific validation for sleep-disordered breathing. However, it is indicated for an age group that includes adolescents.¹⁵ To date, there is no validated

questionnaire for SDB that is specific for use in preschoolers and schoolchildren, phases known to show an increase in the incidence of these disorders.

The pediatric obstructive sleep apnea screening tool (PosaST) is a questionnaire developed and validated by Gozal et al.,^{16,17} which has high sensitivity and moderate specificity for the diagnosis of moderate to severe OSAS in preschoolers and school children. This tool can discriminate children at greater risk for OSAS and, consequently, indicates those with greater urgency to undergo PSG and subsequent treatment of the underlying pathology.^{16,17}

The aim of this study was to translate, culturally adapt, and validate the PosaST for use in the pediatric population of Brazil, as this tool has high potential when SDB is suspected, a fact that is even more important due to the patients' difficulty in access to PSG exams.

Materials and methods**Study participants**

Children aged 3–9 years referred to sleep laboratories by their attending physicians to undergo polysomnography for

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