

Anxiety Rating Scale for Speech and Hearing-impaired Children

Prathima G Shivashankarappa¹, Jaikiran Kaur², Sanguida Adimoulame³

ABSTRACT

Background: It has been observed that children with special healthcare needs exhibit higher dental anxiety levels because of various barriers. In the literature, there is no anxiety assessment scale for speech and hearing-impaired children. A new concept of pictorial representation of common emotions observed during dental treatment was used to design an innovative scale, thereby helping to improve communication and in bringing out positive behavior among the children. This study aimed to assess and validate the efficacy of an anxiety rating scale for speech and hearing-impaired children.

Materials and methods: A total of 36–12-year-old children with speech and hearing impairments from a special school were selected for this study. The pretreatment anxiety score among the children was assessed using the pictorial anxiety rating scale.

Results: The anxiety rating scale was well accepted by speech and hearing-impaired children. It was well-supported by expert opinions and equal distribution of anxiety scores.

Conclusion: The pictorial scale is a valid anxiety assessment scale for measuring dental anxiety among speech and hearing-impaired children. It can be used independently to assess dental anxiety in clinical settings and epidemiological studies as well.

Keywords: Anxiety assessment scale, Dental anxiety, Hearing-impairment, Pediatric dentistry, Speech impairment.

International Journal of Clinical Pediatric Dentistry (2022): 10.5005/jp-journals-10005-2459

INTRODUCTION

The strength of pediatric dentistry that differentiates us from other fields in dentistry is behavior guidance. Fear and anxiety are the primary emotions in children, which need consideration during the dental management of children, especially children with special health care needs.

Dental anxiety and the fear of pain associated with dental visit remain widespread among children.¹ The uncooperative behavior is attributed to a child's behavioral demonstration of anxiety, which can lead to a delay in treatment or affect the standard of care.² Studies have shown that uncooperative and anxious children tend to avoid dental care and show poor oral health conditions as compared to less anxious and more cooperative peers.³ Early identification of dental anxiety among children is important for providing appropriate patient management and successful treatment.⁴

Over 6% of the world's population has hearing loss (432 million adults and 34 million children) (World Health Organization 2018). According to the National Sample Survey Organization in India, 0.4% of 1065.40 million children hear disabled, and every one child in 1000 live birth suffers from a hearing disability.⁵ Various methods have been used in literature for the assessment of dental anxiety, but till now, no consideration has been given to assessing the level of dental anxiety among speech and hearing-impaired children.

In the present study, an innovative anxiety rating scale was designed for speech and hearing-impaired children. The introduction of a new concept with pictorial representation (using sign language) for anxiety assessment can lead to improvement in communication between the clinician and the special children.

^{1,3}Department of Pediatric and Preventive Dentistry, Indira Gandhi Institute of Dental Sciences (IGIDS), Sri Balaji Vidyapeeth (Deemed to be University), Puducherry, India

²Pediatric and Preventive Dentist, Private Practitioner, Delhi, India

Corresponding Author: Prathima G Shivashankarappa, Department of Pediatric and Preventive Dentistry, Indira Gandhi Institute of Dental Sciences (IGIDS), Sri Balaji Vidyapeeth (Deemed to be University), Puducherry, India, Phone: +91 9448405074, e-mail: prathimag@igids.ac.in

How to cite this article: Shivashankarappa PG, Kaur J, Adimoulame S. Anxiety Rating Scale for Speech and Hearing-impaired Children. *Int J Clin Pediatr Dent* 2022;15(6):704–706.

Source of support: Nil

Conflict of interest: Dr Prathima G Shivashankarappa is associated as the National Editorial Board member of this journal and this manuscript was subjected to this journal's standard review procedures, with this peer review handled independently of this editorial board member and her research group.

Patient consent statement: The author(s) have obtained written informed consent from the patient's parents/legal guardians for publication of the case report details and related images.

MATERIALS AND METHODS

This study was undertaken to validate the first anxiety assessment scale for evaluating anxiety among speech and hearing-impaired children between 6 and 12 years of age visiting the dentist for the first time. The study was approved by the ethical committee of the institution. All eligible individuals who were willing to participate were included in the study. Parent consent and children's assent were obtained. Children having previous dental experience and

suffering from other systemic, psychological, or cognitive disorders were not included in the study.

Before the administration of the scale to the children, six experts of Indian Sign Language (ISL), from the Deaf Enabled Foundation reviewed the anxiety rating scale, and they approved the sign language used in the scale and considered it suitable for its use to evaluate anxiety level among speech and hearing-impaired children.

The anxiety rating scale consists of original photographs of a child. Two separate sets of photographs were used that is, one for boys (Fig. 1) and one for girls (Fig. 2). Parents were informed regarding the pictorial scale and their consent was taken for utilization of photographs of their child in the study. The scale represented five different human expressions depicted by a boy and a girl separately in sign language and a ruler showing 1–5 score, namely—very happy, happy, neutral, anxious, and very anxious emotions. It was kept separate for girls and boys to maximize its acceptability among both genders.

The newly designed scale was administered by the primary investigator (priorly trained in ISL) among 30 speech and hearing-impaired children before the dental treatment in the clinic waiting area. The children were explained about pointing at the emotion that they were relating to at that point in time by the trained investigator. All children were found to be receptive to the scale and were able to point out the picture according to what they were feeling at that point in time.

RESULTS

Among all speech and hearing-impaired children of age group 6–12 years, 19 (63%) were boys, and 11 (37%) were girls.

The mean age of males was 9.84 ± 1.83 years and the mean age of females was 10 ± 1.89 years, with an overall mean age of 9.9 ± 1.83 years. Both groups were found to be statistically similar (Table 1).

The mean anxiety score was 2.95 ± 1.31 among males and 2.64 ± 1.36 among females, and the statistically independent *t*-test showed that the difference in scores in both groups was significant (Table 2).

Choices of scores in the anxiety rating scale were equally distributed except for score—2 (happy), which had slightly more frequency, with an average score of 2.9 ± 1.37 .

Face and content validity were confirmed by “subject-matter experts” who checked the suitability and appropriateness of the scale. Based on sign language expert opinions, equal distribution of choices of scores, and receptiveness, the scale validation was done. This anxiety rating scale was designed by all the authors; hence the name was decided upon, based on their initials as “PJS–Pictorial Scale (PJS–PS).”

DISCUSSION

Pediatric dentistry has been identified as the specialty responsible for the development, research, and expertise in the area of behavior guidance associated with the dental care of children in dental

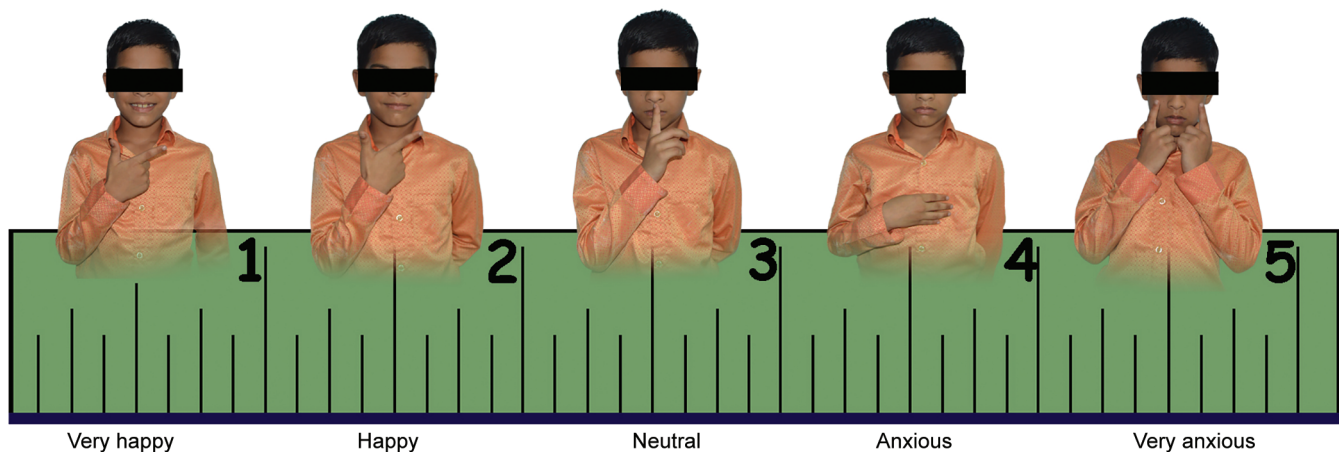


Fig. 1: PJS-PS for boys

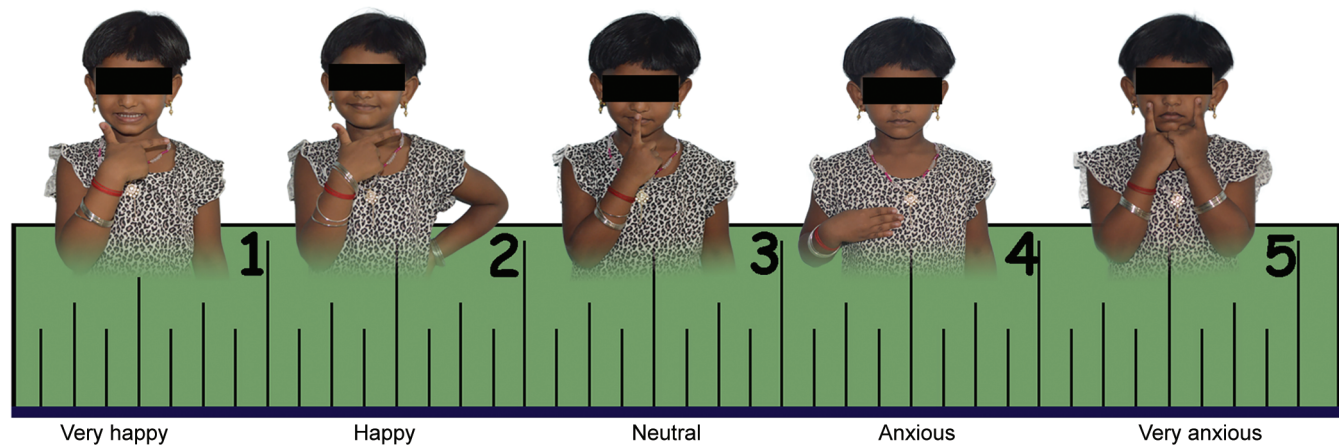


Fig. 2: PJS-PS for girls

Table 1: Distribution of children as per age and gender ($n = 30$)

Age (years)	n	Gender		Age (mean \pm standard deviation)		Significance level	
		Male	Female	Male	Female	t-statistic	p-value
6–12	30	19	11	9.84 \pm 1.83	10 \pm 1.89	2.08	0.83

p -value < 0.05, statistically significant

Table 2: Distribution of mean anxiety scores

Anxiety scale	Gender	N	Mean \pm standard deviation	Significance level	
				t-statistic	p-value
PJS-PS	Male	19	2.95 \pm 1.31	2.08	0.54
	Female	11	2.64 \pm 1.36		

p -value < 0.05, statistically significant

settings.⁶ Many children still find dental visits stressful, which can affect their behavior during treatment. This is the reason; behavior guidance is an essential part of pediatric dentistry.⁷

Children with disabilities may exhibit resistant behaviors because of dental anxiety or a lack of understanding of dental care.⁸ When treating patients with special health care needs, similar to any other child, developmentally appropriate communication is critical. Speech and hearing impairment has an impact on oral health through physical, social, or informational barriers, attendant medical conditions (and associated medical disorders), or a lack of customized information.⁹ Although dental anxiety in speech and hearing-impaired children has not been identified, knowing their anxiety levels will help the pediatric dentist to follow the appropriate behavior guidance techniques.¹⁰

We developed an anxiety assessment tool, especially for speech and hearing-impaired children, which can help the clinician to assess their pretreatment anxiety levels and, therefore can guide the dentist to follow appropriate behavior guidance techniques.

There is no anxiety scale available in the literature to assess anxiety levels among these children; therefore, this scale could not undergo comparative analysis for validation, and only face and content validity was done.

In the present study, analysis was limited to a certain geography. Thus, further studies may be required to evaluate the global acceptability of the PJS-PS.

CONCLUSION

From the observations of our study, this anxiety assessment tool fulfills the ideal requirements of an assessment tool with the following advantages:

- It was easy to comprehend by speech and hearing-impaired children as the emotions were depicted in sign language.
- As children were able to point at the emotion, they were feeling at that point in time, and it was easy to record their responses.
- The emotions depicted in images in PJS-PS are dissimilar, precise, and self-explanatory. Hence, it makes the response of children more accurate.
- PJS-Pictorial Scale (PJS-PS) showed similar results among both genders.
- Improves patient-clinician relationship.

Based on the results, "PJS-PS" was well accepted by the children and hence can be used in future studies as an evaluating tool for anxiety in speech and hearing-impaired children. It can be used independently to assess dental anxiety among these children.

It will not only pave the road to satisfactory clinical outcomes but also build confidence in speech and hearing-impaired pediatric patients, thereby making their dental visit uneventful.

ACKNOWLEDGMENT

We sincerely thank Dr. Ezhumalai G, Senior Statistician and Research Consultant, Mahatma Gandhi Medical College, Sri Balaji Vidyapeeth University, for his continuous help and support for the validation of the scale.

ETHICS STATEMENT

Study approved by the Institutional Ethical Committee with IEC approval code of IGIDSIEC2018NRP45PGJKPPD.

REFERENCES

1. Corah NL, Gale EN, Illig SJ. Assessment of a dental anxiety scale. *J Am Dent Assoc* 1978;97(5):816–819. DOI: 10.14219/jada.archive.1978.0394
2. Allen KD, Stark LJ, Rigney BA, et al. Reinforced practice of children's cooperative behavior during restorative dental treatment. *ASDC J Dent Child* 1988;55(4):273–277.
3. Klingberg G, Berggren U, Carlsson SG, et al. Child dental fear: Cause-related factors and clinical effects. *Eur J Oral Sci* 1995;103(6):405–412. DOI: 10.1111/j.1600-0722.1995.tb01865.x
4. Shetty RM, Khandelwal M, Rath S. RMS Pictorial Scale (RMS-PS): An innovative scale for the assessment of child's dental anxiety. *J Indian Soc Pedod Prev Dent* 2015;33(1):48–52. DOI: 10.4103/0970-4388.149006
5. Jain M, Mathur A, Kumar S, et al. Dentition status and treatment needs among children with impaired hearing attending a special school for the deaf and mute in Udaipur, India. *J Oral Sci* 2008;50(2):161–165. DOI: 10.2334/josnusd.50.161
6. Wilon S, Cody WE. An analysis of behavior management papers published in the pediatric dental literature. *Pediatr Dent* 2005;27(4):331–338.
7. American Academy of Pediatric Dentistry. Behavior guidance for the pediatric dental patient. *Pediatr Dent* 2020;39(6):362–324.
8. American Academy of Pediatric Dentistry. Management of dental patients with special health care needs. Chicago: American Academy of Pediatric Dentistry. 2016.
9. Alsmark SS, García J, Martínez MR, et al. How to improve communication with deaf children in the dental clinic. *Med Oral Patol Oral Cir Bucal* 2007;12(8):E576–E581.
10. Al-Namankany A, de Souza M, Ashley P. Evidence-based dentistry: analysis of dental anxiety scales for children. *Br Dent J* 2012;212(5):219–222. DOI: 10.1038/sj.bdj.2012.174