Reliability of Chotta Bheem – Chutki Scale for Dental Anxiety Determination in Children

[1]Dr. Shobha Fernande, Professor and HOD, Narsinhbhai Patel dental Collage & Hospital, Sankalchand Patel University

[2]Dr. Shivani Soni, Postgraduate student, Narsinhbhai Patel dental Collage & Hospital, Sankalchand Patel University

[3]Dr.Javanika Kotadiya, Postgraduate student, Narsinhbhai Patel dental Collage & Hospital, Sankalchand Patel University

[3]Dr.Yash Bafna, Reader, Narsinhbhai Patel dental Collage & Hospital, Sankalchand Patel University

[4]Dr. Krunal Choksi, Reader, Narsinhbhai Patel dental Collage & Hospital, Sankalchand Patel University

Corresponding Author: Dr. Shivani Soni, Postgraduate Student, Narsinhbhai Patel dental Collage & Hospital, Sankalchand Patel University

Citation of this Article: Dr. Shobha Fernandes, Dr. Shivani Soni, Dr. Javanika Kotadiya, Dr. YashBafna, Dr. Krunal Choksi, "Reliability of Chotta Bheem – Chutki Scale for Dental Anxiety Determination in Children", IJDSIR- October - 2020, Vol. – 3, Issue - 5, P. No. 185 – 189.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

A Newly devised pictorial scale Chotta Bheem–Chutki scale, with cartoon characters that are familiar to the children was introduced for the assessment of Child's dental anxiety at their first dental visit. Evaluation of the psychometric properties of the Faces version of the ChottaBheemChutki scale, including the reliability and validity. Patients were selected randomly selected from school. And Cross-sectional study. In this study, the ChottaBheemChutki was applied to measure dental anxiety levels among 8–10 year-old children. The questionnaire was developed from the Modified Child Dental Anxiety Scale (MCDAS) with the addition of faces rating scale to assess dental anxiety among anxious children. To assess the test–retest reliability this new scale, was completed by participants on two separate occasions 3 weeks apart. Result shows high positive intra class correlation, 0.897 value and good Internal Consistency-0.869 correlation coefficient value. The overall Reliability demonstrated was positive.

Keywords: Dental Anxiety, reliability, chotta bhem chutki scale, modified child dental anxiety scale.

Introduction

Dental fear is a key factor that may cause patients to avoid, delay, or even cancel dental appointments, leading to irregular attendance patterns. Dental anxiety is a universal problem that affects children as well as adults. Dental anxiety among children has continued to generate a great deal of interest in Pediatric dentistry. It is a potential problem in patient management. Despite the evolving trends in dentistry, anxiety and feeling of fear still persists for dental treatment in general population, especially in children and adolescents. Previous research has shown a prevalence of approximately 6-20%, irrespective of

culture and country. The prevalence of dentally fearful children ranges from 3 to 55% in various populations.

Early assessment of fear serves as an essential tool to identify children who may require special care to overcome anxiety in a dental setting. For this purpose, formal assessment measures are indispensable.

Innumerable approaches are available in the literature for the assessment of dental anxiety. Evaluation methods prevalent are: Physiological parameters – measurement of pulse rate, blood pressure, muscle tension, projective techniques such as Children's Dental Fear Picture Test, psychological test such as Corah's Dental Anxiety scale (CDAS) and Modified Child Dental Anxiety Scale (MCDAS).

The advantages of $MCDAS_F$ are its ease of administration with minimal time duration. For younger children (as young as 3 years old), the questions can be recited out and children can pick the appropriate face on the scale to specify their anxiety level. Older children (8 years and above) are able to complete the questionnaire without assistance. The $MCDAS_F$ is a reliable measure of dental anxiety among children aged 8–12 years, signifying good reliability and validity.

CBC (ChottaBheem–Chutki) scale is rapid and easy to administer, and is merely a reflection of the chosen figure. The familiarity of the children with the cartoon characters used in the scale helped them relate to it. Furthermore, queries of preference among child patients indicated CBC scale, for its simplicity and ease of comprehension.

This newly developed CBC scale (Sadana et al. 2016), comprises of two separate cards; one for boys - "ChottaBheem" and the other for girls – "Chutki" cartoon characters that depict various emotions [happy to unhappy and run away emotion].

CBC scale provides immediate "state" feedback to the dentist and allows to design appropriate treatment plans and behaviour management in children. In addition, CBC scale has the potential to measure not only the degree of negativity but also how positive the child feels.

Aim:-The aim of the study was to evaluate the Reliability of ChottaBheem – Chutki Scale for Dental Anxiety Determination among Children".

Materials and Methods

After ethical clearance was obtained, the present cross sectional study was conducted among the 120 children aged 9–12 years selected randomly from the OPD, based on the inclusion and exclusion criteria. Informed consent was obtained from Children and their parents/guardians.

To assess the test–retest reliability the CBC was accomplished by participants on two separate occasions 3 weeks apart. The demographic data of the participants was recorded on all questionnaires, which were completed under standardized conditions.

The sample size for the present study was calculated using the formula: $n = 4PQ/L$ [$P = 6.3\%$ (as per previous studies);$Q = 100 - P, L = 5\%$].

Table 1

Inclusion criteria	Exclusion criteria
• Children with no history of major illness.	• Physically and mentally challenged children.
• First dental visit	• Children with history of previous dental visit.
• Accompanied by the parent or guardian.	

Methodology

• The present study was conducted among 120 children, 9-12 year old selected randomly with no previous dental exposure. The questions were adapted from

MCDAS$_f$ and matched with ChottaBheemChutki picture scale, in order to test the reliability.

- Participants were given clear instructions. The ChottaBheemChutki scale in the local language (Gujarati) was applied. After 3 weeks duration, the CBC scale was re applied. The data was subjected to statistical analysis.
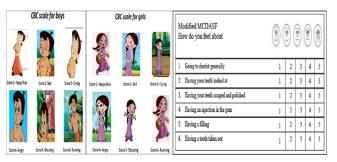

Fig. 1: CBC scale in local language

Result

Table:-2 Age and Gender wise Distribution

Age	Gender		Total
	Male	Female	
9 Years	42	20	62
10 Years	19	29	48
11 Years	2	3	5
12 Years	1	4	5
Overall score	64	56	120

Age wise Distribution

Mean score was 25.27 during 1st reading and 25.15 during second reading among age group of 9 year. Mean score was 22.96 during 1st reading and 22.94 during second reading among age group of 10 year. Mean score was 20.00 during 1st reading and 20.00 during second reading among age group of 11 year. Mean score was 12.80 during 1st reading and 13.00 during second reading among age group of 9 year. Overall mean score was 23.61 during 1st reading and 23.54 during second reading among age group of 9 year.
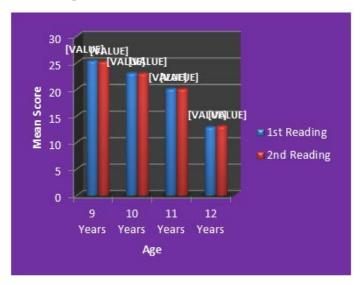
Individual parameter wise distribution

Table: 3 Individual parameter wise distribution

Individual parameter	1st Reading		2nd Reading	
	Mean	95% CI	Mean	95% CI
Going to the dentist generally	1.94	1.70, 2.18	1.94	1.70, 2.18
Having your teeth looked at	2.48	2.24, 2.71	2.50	2.27, 2.73
Having your teeth scrapped and polished	2.76	2.45, 3.07	2.75	2.44, 3.06
Having an injection in the gum	3.09	2.83, 3.35	3.10	2.84, 3.36
Having a filling	3.26	2.97, 3.54	3.19	2.91, 3.47
Having a tooth taken out	3.37	3.07, 3.66	3.37	3.07, 3.66
Being put to sleep to have treatment	2.98	2.72, 3.25	2.97	2.70, 3.23
Having a mixture of 'gas and air' which will help you comfortable for treatment but cannot put you to sleep	3.73	3.40, 4.07	3.73	3.39, 4.06
Overall Score	23.61	22.49, 24.73	23.54	22.43, 24.65

Our result demonstrated good Internal Consistency with 0.869 Cronbach's alpha value**.**

Discussion

The prevalence of dental anxiety among children between 5-10 years of age in a study population in India was found to be 6.3%. Dental anxiety has shown to affect

approximately 9% of children and adolescents in Europe and in countries such as Australia, Canada, and the USAccording to Buchanan, an ideal anxiety assessment scale should be: A. Short in length to maximize the response from the children and minimize the time for its administration. B. Include items which are most relevant to the child's dental experience.

Given the significance of anxiety in the practice of dentistry, it is crucial that the practitioner is able to detect and assess the severity of anxiety among child patients with a valid method of measurement. There has been a wide range of inventories proposed to identify and quantify dental anxiety in children. Koenigsberg and Johnston suggested that maternal anxiety is only for child's first visit, after which "previous experience" tends to have more significant weighting.

When looking into the utility of an assessment measure, three important factors should be considered: Validity of the instrument must be taken into account. It must be suitable for use with pediatric patients. The assessment measure should be of practical use in dental practice. Thus, an ideal measure should be valid, simple, short in length, easily administered, attention grabbing for the child, and easy to measure. In order to fulfil the above mentioned criteria, choosing picture tests for assessment of anxiety is appropriate. The CBC scale does fulfil the prerequisites mentioned above, as is suggested by the outcomes of this study. CBC is rapid and easy to administer, and is simply a reflection of the figure chosen. Moreover, children are familiar with the cartoon characters used in the scale and therefore relate to it. Furthermore, when child patients were asked which scale was the simplest and easiest to understand, majority of them chose the CBC scale.

Its simplicity andfamiliar figures put into limelight its establishment as a benchmark to assess the level of dental anxiety faced byyoung children. Hence, the CBC scale can be used as a new alternative for dental anxiety assessment in youngchildren. Advantages of CBC scale: - Colorful and attractive, Characters from ongoing famous cartoon series, Separate cards for boys and girls, Takes very short time.

Thus reliability of CBC scale was evaluated, as it is ideal for assessment of anxiety among children.The $MCDAS_F$ demonstrated excellent test–retest reliability over a relatively long period.The Internal consistency of the CBC is 0.86 comparable to that of the $MCDAS_F$ which has been reported as 0.82. The CBC was therefore found to be a reliable measure of child dental anxiety, which demonstrated good test–retest reliability and good internal consistency. This result may be attributed to popularity of these cartoons among the Indian children

Conclusion

The CBC is a reliable measure of dental anxiety in children, demonstrating good reliability.Its simplicity and familiar figures emphasize ease of applicability to assess the level of dental anxiety among young children. Hence, the CBC scale can be viable new alternative for dental anxiety assessment among Indian children.

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