Translation and cultural adaptation of the Children's Experiences of Dental Anxiety Measure (CEDAM) to Brazilian Portuguese

Tradução, adaptação cultural e análise das propriedades psicométricas da *"Children's Experiences of Dental Anxiety Measure"* para uso em crianças brasileiras

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ABSTRACT

Objective: The Children's Experiences of Dental Anxiety Measure (CEDAM) was originally developed in English to assess important aspects of dental anxiety for children. The aims of the study were to translate and perform the cultural adaptation of the CEDAM to Brazilian Portuguese. **Material and Methods:** The CEDAM consists of 14 items, measured by a Likert scale of 3 points, that indicates the intensity of dental anxiety. The questionnaire was translated to Brazilian Portuguese, back-translated to English, reviewed by an Expert Committee and pretested in 10 eight- to twelve-year-old schoolchildren. **Results:** The Expert Committee Review compared the original, translated (T1, T2) and back-translated (BT1, BT2) versions and recommended some changes in order to achieve good understanding of the items. In the pretest, only question 8 was misunderstood by one child, i.e., the translated version was well-understood by more than 85% of the participants. **Conclusion:** The Brazilian CEDAM was culturally adapted for the evaluated population of children.

KEYWORDS

Child; Dental anxiety; Pediatric dentistry; Surveys and questionnaires; Translating.

RESUMO

Objetivo: A escala Children's Experiences of Dental Anxiety Measure (CEDAM) foi originalmente desenvolvida em Inglês para avaliar importantes aspectos da ansiedade odontológica em crianças. Os objetivos do estudo foram traduzir e realizar a adaptação cultural da CEDAM para o Português Brasileiro. **Material e Métodos:** A CEDAM consiste de 14 itens, medidos por escala Likert de 3 pontos, que indica a intensidade da ansiedade odontológica. O questionário foi traduzido para o Português Brasileiro, retraduzido para o Inglês, revisado por um Comitê de Especialistas e pré-testado em 10 escolares de oito a doze anos. **Resultados:** O Comitê Revisor de Especialistas comparou as versões original, traduzida (T1, T2) e retraduzida (BT1, BT2) e recomendou algumas mudanças a fim de obter uma boa compreensão dos itens. No pré-teste, somente a questão 8 não foi compreendida por uma criança, isto é, a versão traduzida foi bem compreendida por mais de 85% dos participantes. **Conclusão:** A versão brasileira da CEDAM foi culturalmente adaptada para a população avaliada de crianças.

PALAVRAS-CHAVE

Criança; Ansiedade ao tratamento odontológico; Odontopediatria; Inquéritos e questionários; Tradução.

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INTRODUCTION

Dental anxiety is defined as an anticipation of preoccupation with what might happen during dental visit [1-3]. Dental anxiety compromises children's adherence to dental treatment, resulting in greater oral problems and worse oral health-related quality of life [4-7]. The early approach to this phenomenon favors the organization of dental treatment according to the real needs of the child [7]. According to a systematic review, dental anxiety affects 6 to 19% of children and 12 to 17% when only the child's responses are considered [2]. Additionally, anxiety decreased as the age increased [8] as a consequence of the increase in perceptive and adaptive capacity to aversive stimuli from the environment and circumstances.

The multifactorial etiology of dental anxiety involves somatic, cognitive, and emotional elements, which characterize a state of concern that something bad may happen during dental treatment, related to the feeling of loss of control [9]. Children with previous dental experience showed less anxiety and fear of pain [10]. On the other hand, the painful experience at the time of dental treatment has been stated as the main reason for child uncooperative behavior [11]. Moreover, the dental fear of parents and children with emotionally negative temperament (crying, anger) [12] and ashamed (inhibition, anguish) can also be associated with the phenomenon [13].

Dental anxiety can be measured by self-report instruments [7] Different measures, presenting strengths and limitations [14], have been developed over the years. The Children's Experiences of Dental Anxiety Measure (CEDAM) was developed according to an established cognitive behavioral clinical evaluation model [15] to measure the negative cognitive e emotional aspects of the preoccupation in children [7]. The use of this instrument follows a holistic approach that assesses how much the aforementioned situations contribute to the onset and persistence of anxiety [7,15].

The CEDAM has not been translated for use in Brazil. This scale could support on the determination of factors related to dental anxiety in children, helping clinicians know the way to control or reduce children's dental anxiety [16]. Therefore, the study aimed to translate the CEDAM to Brazilian Portuguese, and perform its cultural adaptation for children.

MATERIAL & METHODS

The project was accepted by the Research Ethics Committee of Federal University of Juiz de Fora (Protocol No.: CAAE 55005421.7.0000.5147) of the Federal University of Juiz de Fora, campus Governador Valadares (UFJF-GV). The sample was obtained from a public school, Escola Estadual Coronel Camilo Soares, Ubá, MG, Brazil. Parents and children signed the written consent and assent, respectively. This study was performed from October to November 2022.

The process of the translation and cultural adaptation was previously authorized by the authors of the original instrument. The CEDAM is a self-report questionnaire of dental anxiety experienced by children. The original English instrument consists of 14 multiple-choice items with response options ranging from 1 to 3 points [7]. The higher the score, the higher the levels of dental anxiety.

Figure 1 shows the process of translation and cultural adaptation [17-19].

Translation

The conceptual translation of the CEDAM into Brazilian Portuguese was performed independently by two Brazilian pediatric dentists (C.S.O., R.A.S.S.R.), English teachers, who worked independently (translated versions – T1, T2).

Back-translation

T1 and T2 were combined by the researchers, and the document was back-translated to English by two native English teachers (H.M., I.A.F.), who worked independently (back-translated versions – BT1, BT2). The accuracy of the English translation based on the original instrument can be verified in this moment.

Expert committee

The translations, back-translations and original instrument were reviewed by a committee composed by five university professors in pediatric dentistry area (A.R.F.C., M.A.B.P., M.B.D.G., R.A.S.S.R., T.S.B), one of whom also teach English language (also participated as translator, T1) and Psychology Applied to Dentistry (R.A.S.S.R.) and one also graduated in the Program of Behavioral-Multidisciplinary Medicine (expert in psychometric analysis of health instruments) (T.S.B.). In this step,
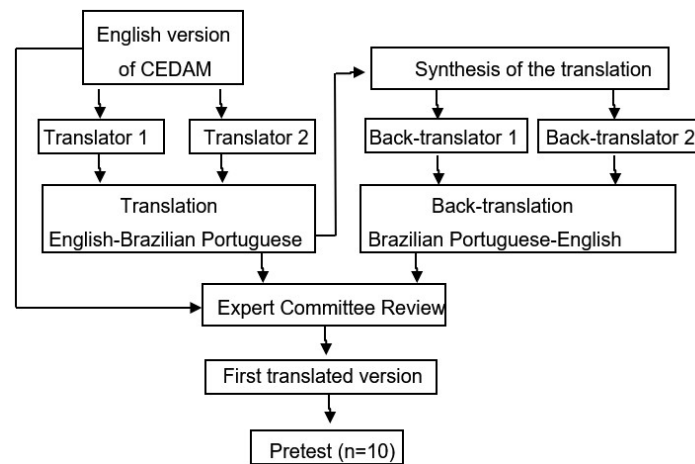
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Figure 1. Synopsis of the methodology.

the semantic, idiomatic and cultural equivalences were considered [19].

Cultural adaptation (pretest)

The first translated version of the CEDAM (V1) was pretest in 10 eight-to twelve-year-old schoolchildren recruited from Escola Estadual Coronel Camilo Soares, Ubá, MG, Brazil (10% of the sample calculated for the main study of validation and reliability, in process). The option "I didn't understand" was used to identify the understandable questions. The questions of CEDAM should not be misunderstood by more than 15% of the respondents. Thus, the final version (FV) was obtained.

RESULTS

Translation, back-translation and review by the expert committee

A summary of suggestions by the Expert Committee was shown on Table I. In the translation process, both versions for some items were identical or practically identical (T1=T2). For other questions, one translation was preferred over the other (T1≠T2), or the two translations were united into a consensus version (T3), with the objective of achieving good understanding of the item.

The future tense was suggested by the Expert Committee Review, as exemplified in Items 2 ("I will say") and 3 ("I will leave"), among others. In the statement, the term "When" was removed from the beginning of the sentence, keeping "Next time"; and the expression "visit the dentist" was replaced by "go to the dentist". In Item 2, the

term "responsible" was preferred over "caregiver" because it is better understood in the context of Brazilian children. In Item 3, the expression "Look inside my mouth" was replaced by "Look at my mouth", as it is more used by the evaluated population. Finally, the first translated version was originated (V1).

Pre-test

The pretest was performed with 10 schoolchildren (♀=6). In applying V1, only question 8 was misunderstood by one eight-year-old female (10%). Therefore, the level of understanding for all items was satisfactory (higher than 85%), and the instrument was considered socioculturally adapted. Table II shows the Brazilian Portuguese version of the CEDAM.

DISCUSSION

The evaluated children had a good understanding of the Brazilian CEDAM. The use of scales to evaluate dental anxiety helps to prevent unexpected behavior by anxious children during dental care and to plan specific treatment according to the emotional needs of each patient [20].

The English study of original CEDAM showed valid and reliable results in nine to sixteen-year-old children with dental anxiety [7]. However, for use in other languages and cultures, it is necessary to combine the literal translation from one idiom to another and to adapt with regards to colloquial language, and to cultural characteristics of the target population [17]. To ensure the robustness of the methodology, it

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Table I - Summary of the suggestions of the Expert Committee

Versão original		Translation		The combined version of T1 and T2		Backtranslation		Eq.	Committee
Item	Sentence	T1	T2	Synthesis		BT1	BT2		V1
2R	I will tell	Eu vou dizer	Eu vou dizer	T1=T2	Eu vou dizer	I will tell	I'll tell	S	Eu direi
2R	Carers	Cuidadores	Responsáveis	T1	Cuidadores	Caregivers	Caregivers	C	Responsáveis
3-5S	When I next visit	Quando eu visitar ... na próxima vez	Quando eu visitar, da próxima vez,	T1	Quando eu visitar ... na próxima vez	When I visit ... next time	Next time I go to...	C	Na próxima vez que eu for
3R	I will let	Eu vou deixar	Eu vou deixar	T1=T2	Eu vou deixar	I will let	I'll let	S	Eu deixarei
3R	In my mouth	Dentro da minha boca	A minha boca	T1	Dentro da minha boca	Inside my mouth	Inside my mouth	I	A minha boca
3R	I will try	Eu vou tentar	Eu vou tentar	T1=T2	Eu vou tentar	I will try	I'll try	S	Eu tentarei
3R	I will not let	Eu não vou deixar	Eu não vou deixar	T1=T2	Eu não vou deixar	I will not let	I'll not let	S	Eu não deixarei
5R	They would not stop	Ele não pararia	Eles não iam parar	T3	Eles não iriam parar	They wouldn't stop	They wouldn't do so	S	Eles não parariam
6-8S	When I next visit the dentist, I think	Quando eu visitar o dentista na próxima vez eu penso que	Quando eu visitar, da próxima vez, o dentista, eu acho	T3	Quando eu visitar o dentista na próxima vez eu acho que	When I visit the dentist next time I think	Next time I go to the dentist, I think	C	Na próxima vez que eu for ao dentista, eu acho que
6R	I will not be worried	Eu não ficarei preocupado(a) que	Eu não vou me preocupar se	T3	Eu não ficarei preocupado(a) se	I won't be worried if	I won't be worried about	S	Eu não me preocuparei se
6R	I will be a little worried	Eu ficarei um pouco preocupado(a) que	Eu vou ficar um pouco preocupado(a) se	T3	Eu ficarei um pouco preocupado(a) se	I will be a little worried if	I'll be a little worried about	S	Eu me preocuparei um pouco se
6R	I will be very worried	Eu ficarei muito preocupado(a) que	Eu vou ficar muito preocupado(a) se	T3	Eu ficarei muito preocupado(a) se	I will be very worried if	I'll be very worried about	S	Eu me preocuparei muito se
9-14S	When I next visit the dentist, I think I will	Quando eu visitar o dentista na próxima vez eu penso que eu irei	Quando eu visitar, da próxima vez, o dentista, eu acho que vou	T3	Quando eu visitar o dentista na próxima vez eu acho que eu irei	When I visit the dentist next time I think I will	Next time I go to the dentist, I think I will	C	Na próxima vez que eu for ao dentista, eu acho que
9-13R	Not feel	Não me sentir	Não me sentir	T1=T2	Não me sentir	Not feel	Not feel	S	Eu não me sentirei
9-13R	Feel	Me sentir	Sentir-me	T1	Me sentir	Feel	Feel	S	Eu me sentirei
14R	Feel that	Sentir que	Sentir que	T1=T2	Sentir que	Feel that	Feel that	S	Eu sentirei que
14R	I can only trust	Eu posso confiar apenas	Só posso confiar	T1	Eu posso confiar apenas	I can only trust	I can only trust	I	Eu posso confiar somente

S, statement; R, response; T1, translation 1; T2, translation 2; BT1, back-translation 1; BT2, back-translation 2; V1, first translated version; Eq., equivalence; S, semantic; I, idiomatic; C, cultural.

is necessary to follow and record each step of the process in detail [17-19].

The use of only one translation requires extreme skill and knowledge from the translator, often resulting in low validity and reliability [21]. Moreover, if for one side, the literature recommends professional translators [22], on the other hand, translators with high sociocultural level may not represent the overall population [17]. In the same way, some authors recommend that the translator has previous experience with health questionnaires [23], and others that at least one of the translators had technical knowledge about the subject and the other not [17,19]. To obtain high-quality translation, this study used two translators, pediatric dentistry specialists (T1, T2) and two independent back-translators (BT1, BT2). During these stages, the meaning

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Table II. The Brazilian Portuguese version of CEDAM.

Medida de experiências de ansiedade odontológica em crianças	
Item	**Respostas**
1. Quando eu sei que eu tenho uma consulta com um dentista…	1. Eu não farei nada para evitar ir.
	2. Eu farei algumas coisas para evitar ir.
	3. Eu farei tudo para evitar ir.
2. Quando eu sei que eu tenho uma consulta com um dentista…	1. Eu direi aos meus pais/responsáveis que eu não me importo de ir.
	2. Eu direi aos meus pais/responsáveis que eu preferiria não ir.
	3. Eu direi aos meus pais/responsáveis que eu realmente não quero ir.
3. Na próxima vez que eu for ao dentista…	1. Eu deixarei o dentista olhar a minha boca.
	2. Eu tentarei impedir um pouco o dentista de olhar a minha boca.
	3. Eu não deixarei o dentista olhar a minha boca.
4. Na próxima vez que eu for ao dentista…	1. Eu não me preocuparei se o dentista me disser que eu preciso fazer algo.
	2. Eu me preocuparei um pouco se o dentista me disser que eu preciso fazer algo.
	3. Eu realmente me preocuparei se o dentista me disser que eu preciso fazer algo.
5. Na próxima vez que eu for ao dentista…	1. Se eu pedisse ao dentista para parar o que eles estavam fazendo, eles definitivamente parariam.
	2. Se eu pedisse ao dentista para parar o que eles estavam fazendo, eles poderiam parar.
	3. Se eu pedisse ao dentista para parar o que eles estavam fazendo, eles não parariam.
6. Na próxima vez que eu for ao dentista, eu acho que…	1. Eu não me preocuparei se será doloroso.
	2. Eu me preocuparei um pouco se será doloroso.
	3. Eu me preocuparei muito se será doloroso.
7. Na próxima vez que eu for ao dentista, eu acho que…	1. Nada dará errado.
	2. Alguma coisa dará um pouco errado.
	3. Alguma coisa dará muito errado.
8. Na próxima vez que eu for ao dentista, eu acho que…	1. Eu terei muito controle sobre o que acontece na consulta.
	2. Eu terei um pouco de controle sobre o que acontece na consulta.
	3. Eu não terei nenhum controle sobre o que acontece na consulta.
9. Na próxima vez que eu for ao dentista, eu acho que…	1. Eu não me sentirei trêmulo(a).
	2. Eu me sentirei um pouco trêmulo(a).
	3. Eu me sentirei muito trêmulo(a).
10. Na próxima vez que eu for ao dentista, eu acho que…	1. Eu não me sentirei estressado(a).
	2. Eu me sentirei um pouco estressado(a).
	3. Eu me sentirei muito estressado(a).
11. Na próxima vez que eu for ao dentista, eu acho que…	1. Eu não me sentirei chateado(a).
	2. Eu me sentirei um pouco chateado(a).
	3. Eu me sentirei muito chateado(a).
12. Na próxima vez que eu for ao dentista, eu acho que…	1. Eu não me sentirei envergonhado(a)
	2. Eu me sentirei um pouco envergonhado(a).
	3. Eu me sentirei muito envergonhado(a).
13. Na próxima vez que eu for ao dentista, eu acho que…	1. Eu não me sentirei bravo(a).
	2. Eu me sentirei um pouco bravo(a).
	3. Eu me sentirei muito bravo(a).
14. Na próxima vez que eu for ao dentista, eu acho que…	1. Eu sentirei que eu posso confiar completamente no dentista.
	2. Eu sentirei que eu posso confiar somente um pouco no dentista.
	3. Eu sentirei que eu não posso confiar no dentista.

of the words was valued in order to better express concepts or situations of the evaluated population [17,24]. For example, the term "look in my mouth" (Item 3) would be literally translated to "look inside my mouth", but the term "look at my mouth" was chosen, as it is considered a term of better understanding by schoolchildren under study. In this line, the original term "carers" (Item 2), which would be translated to "caregivers", was replaced by "responsible".

To minimize bias, the committee organization must be cautious of commons views among the members and a possible pressure to form a consensus [21]. A multidisciplinary committee must have one methodologist, a health professional, a specialist in languages, all translators and back-translators and the records of the translation process so far [25]. The present study used a heterogenous committee, with members with similar experience in pediatric dentistry, but with different expertise in Psychology, Language and Psychometry areas. Moreover, one of them also participated as translator of the original questionnaire (T1).

Detecting and solving problems in the earlier phases of the study is only possible by redirecting the decisions in the process by the expert committee [26]. It is noteworthy that, in all changes, the maintenance of the same effect and context intended by the original instrument was prioritized.

The level of understanding of the first translated version (V1) was tested in a small number of the target population. Small errors (grammar, typing, formatting) that still remain at this stage also should be reviewed [23]. In the present study, item 8 was misunderstood by one eight-year-old female. This question asked about self-control over what happens in the appointment. Perhaps the concept of self-control can be a little confusing for young children. Interesting aspect of the cultural adaptation is the possibility of using the technique of decentralization in the resolution of discrepancies [17,22]. In decentralization, there is an understanding that the process of cultural adaptation is bilateral and that the difficulty in achieving equivalence in the target language can be resolved by altering the original instrument so that its new version is more easily translated/adapted. In this study, considering that the percentage of misunderstandings was less than

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15% no reformulation was performed, and the evaluated children showed good understanding of the Brazilian CEDAM.

It is important to highlight that cultural adaptation enables testing content and face validity between the original scale and the translated one, not guaranteeing, however, the criterion validity and reliability of the original instrument. For cultural adaptation to be fully achieved, a study with an assessment of the psychometric properties of the Brazilian CEDAM in different contexts, such as pediatric dentistry clinic, where children have had previous experience with dental treatment. The validity and reliability of the questionnaire should also be tested in representative samples.

CONCLUSION

In conclusion, CEDAM was carefully translated into Brazilian Portuguese and well-understood by the evaluated population. Further studies are need to test psychometric properties of the questionnaire.

Acknowledgements

The authors wish to express their gratitude to Prof. Jenny Porritt, Sheffield Hallam University, for providing the original CEDAM and thank all children who participated as volunteers in the survey. The authors thank R.A.S.S.R., H.M. e I.A.F. who participated as translators and back-translators of the questionnaire.

Author's Contributions

JHLS: Conceptualization, Methodology, Data Curating, Writing – Original Draft Preparation. MBDG: Methodology, Writing – Review & Editing. CSO: Methodology, Writing – Review & Editing. MABP: Methodology, Writing – Review & Editing ARFC: Methodology, Writing – Review & Editing. TSB: Conceptualization, Methodology, Data Curating, Writing – Review & Editing, Supervision.

Conflict of Interest

The authors of the manuscript declare that there are no conflicts of interest.

Regulatory Statement

This study was conducted in accordance with all the provisions of the local human subjects oversight committee guidelines and policies of: Research Ethics Committee of Federal University of Juiz de Fora. This study protocol was reviewed and approved by [Research Ethics Committee of Federal University of Juiz de Fora], approval number [CAAE 55005421.7.0000.5147].

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