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# MethodsX





# Translation and cross-cultural adaptation of a portuguese version of the eating disorder assessment for DSM-5 (EDA-5) for Brazil and Portugal $^{\diamondsuit, \diamondsuit \diamondsuit}$



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### ABSTRACT

The EDA-5 was translated from English to Portuguese, followed by a cross-cultural adaptation for use in Brazil and Portugal. Two independent translators worked on the Brazilian and European Portuguese versions, which were then reviewed to create a harmonized version. This version was back-translated into English and approved by the original author. Twenty specialists (ten from each country) evaluated the interview's comprehensibility, and items that more than 20% of experts found unclear were revised. Despite sharing a common language, cultural and linguistic differences between the two Portuguese variants were observed. Discrepancies were addressed in the final version, and only 5.8% of the items in Brazil and 11.6% in Portugal were deemed unclear. The harmonized Portuguese version of the EDA-5 was well-received and is now available for healthcare professionals in both countries.

 The final harmonized Portuguese version of the EDA-5 is available online and was wellunderstood by eating disorder specialists in both Brazil and Portugal.

## Specifications table

| Subject area:                          | Psychology  |
|--|---|
| More specific subject area:            | EDA-5 questionnaire                                     |
| Name of your method:                   | Translation and Cross-Cultural Adaptation to Portuguese |
| Name and reference of original method: | N/A   |
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## **Background**

Feeding and eating disorders (FED) are a group of clinical syndromes characterized by altered eating behaviors that impact the individual's physical and/or mental health [1]. Based on the Diagnostic and Statistical Manual of Mental Disorders, 5<sup>th</sup> Edition (DSM-5), there are six major diagnostic categories under this umbrella of FED that include anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorders (BED), avoidant-restrictive food intake disorder (ARFID), pica (PI), and rumination disorder (RD) [1]. The FED can begin very early in the individual's life and, in some cases, persist for several years. It is very important for health professionals to be able to diagnose these disorders accurately, enabling the early assessment and management of the cases [2].

For the evaluation of FED, rating scales and clinical interviews have been developed over the last few years to help clinicians and researchers investigate the symptomatology of eating disorders. A great number of eating disorder assessment instruments with specific characteristics are available now [3]. However, in contrast with symptoms rating scales that are not intended for this purpose, structured clinical interviews were specially developed to address the difficulties clinicians and researchers have had in making accurate diagnoses [4,5].

The Eating Disorder Assessment for DSM-5 (EDA-5) is a semi-structured interview that assesses criteria for FED [6]. EDA-5 was developed with the objective of providing a comprehensive and easy-to-use instrument to help clinicians and researchers recognize symptoms and patterns of an eating disorder diagnosis according to the DSM-5 criteria. It is a computer-assisted interview and relies on an algorithm that selects subsequent questions based on answers already obtained. Evidence suggests that it is highly acceptable to patients and takes significantly less time to be administered (15 to 20 min.). In addition, EDA-5 is a free interview presented in a digital version to be used on computers and mobile devices. The development and validation process of the original EDA-5 was published in 2015 [7]. The authors reported a high concordance rate among diagnoses between EDA-5 and EDE, and between EDA-5 and clinical interviews, with the EDA-5 requiring a lower level of training and less time to administer compared to the EDE. In a subsequent study, a validation was conducted on the Norwegian version of the EDA-5, the first international validation of this diagnostic tool [8], confirming the finding of the original study.

EDA-5 was originally developed in English, but it currently has a few versions in several languages, such as Spanish, Norwegian, German, Turkish, and others [9]. However, there is still no version of the interview translated into Portuguese. Thus, one of the objectives of this study is to translate, cross-culturally adapt, and evaluate the comprehensibility of EDA-5 for Portuguese. Furthermore, as the Portuguese language is spoken in Brazil and Portugal, with semantic and grammatical specificities in each of these countries, an additional objective of the current study was to produce a harmonized Portuguese version of the EDA-5 that would facilitate its application in both countries.

## Method details

The EDA-5 was cross-culturally adapted to Portuguese using a symmetrical translation. This is the most recommended approach to keep the meaning and colloquialness in both the original language of the instrument and the target language, avoiding a literal translation. First, we obtained consent to translate EDA-5 from Dr. B. Timothy Walsh, one of the authors of the original version of the instrument. Then, the EDA-5 was adapted to Brazilian and European Portuguese based on the steps recommended by three widely used guidelines for the translation of instruments [10–12].

# Translation

# Forward translation

The original EDA-5 was translated into Brazilian and European Portuguese by two of the authors (CM and RR), who are fluent in the primary language of the instrument (English) and native speakers of the target language (Portuguese). Both are experienced in the assessment, diagnosis, and treatment of eating disorders. In this step, two different versions of the EDA-5 translated into Portuguese were created: a Portuguese Brazilian version for Brazil (BR version) and a European Portuguese for Portugal (PT version).

## Consensus harmonized version

The two translated versions of the EDA-5 in Portuguese were revised and unified to create a consensus harmonized version of the instrument. The two translators and two reviewers from Brazil and Portugal (JA and PPM) participated in this process. Like the translators, the reviewers were fluent in English and native speakers of Portuguese. Both reviewers have extensive experience and are senior researchers in the field of eating disorders.

During the harmonization process of the Portuguese Brazilian and European versions of the EDA-5, translators and reviewers had multiple online meetings to achieve a common and appropriate language for both cultures. A series of changes and adaptations were made to ensure the semantic and conceptual equivalence of the instrument in such contexts as well as to preserve its original meaning. Thus, a harmonized consensual version of the EDA-5 in Portuguese was generated after an agreement between the translators and the reviewers was reached.

## Back-translation

This stage consisted of translating the consensual harmonized version of the EDA-5 in Portuguese into the primary language of the instrument (English). The entire interview was back translated, including its introductory text and its 69 items. The back

**Table 1**Difference in diagnostic terms between Brazil and Portugal.

| English                                       | Brazilian Portuguese                         | European Portuguese  |
|---|--|--|
| Feeding and Eating Disorders                  | Transtornos Alimentares                      | Perturbações da Alimentação e da Ingestão                            |
| Other Specified Feeding or Eating<br>Disorder | Outros Transtornos Alimentares Especificados | Perturbações da Alimentação e da Ingestão com<br>outra Especificação |
| Binge Eating Disorder                         | Transtorno de Compulsão Alimentar            | Perturbação de Ingestão Alimentar Compulsiva                         |
| Purging Disorder                              | Transtorno de Purgação                       | Perturbação Purgativa  |
| Night Eating Syndrome                         | Síndrome do Comer Noturno                    | Síndrome da Ingestão Noturna   |
| Unspecified Feeding and Eating Disorder       | Transtorno Alimentar Não Especificado        | Perturbação da Alimentação e da Ingestão Não                         |
|   |  | Especificada   |

translator was a certified bilingual translator, fluent in Portuguese, and a native English speaker experienced in translating mental health assessment and diagnostic instruments. It is noteworthy that the back translator had no knowledge of the original EDA-5.

## Approved harmonized version

The author of the original EDA-5, the translators, and the reviewers performed an expert panel to compare the back-translation and the original version of the instrument regarding format, wording, grammatical structure of the sentences, and similarity in the meaning. Any inconsistencies, ambiguities, and discrepancies regarding cultural meaning and colloquialisms were addressed and resolved through a consensus. After this step, the approved harmonized version of the EDA-5 in Portuguese was provided.

### Comprehensibility

The approved harmonized version of the instrument was evaluated regarding clarity, comprehensiveness, and conceptual relevance in an expert committee with eating disorders professionals. Although the EDA-5 is a digital diagnostic interview, we opted to use a paper-and-pencil format for the assessment of its comprehensibility due to operational issues.

The comprehensibility of the instrument was evaluated independently in each country. The expert panel comprised 20 members (ten from Brazil and ten from Portugal). Participants were from the following backgrounds: psychologists, psychiatrists, dietitians, and nurses experienced in the assessment and treatment of eating disorders. Each participant rated the instructions, response format, and each item of the approved harmonized version of the EDA-5 regarding its clarity. In addition, they suggested any necessary changes to the instructions or items considered unclear.

### Analysis of results, review, and amendments

All responses were reviewed, and the percentage of clear and unclear items was estimated. As suggested by Sousa and Rojjanasrirat [12], items rated as clear by at least 80% of the experts were considered well-understood, and those considered unclear by more than 20% of the participants were revised. After a discussion between the translators and the reviewers regarding the changes suggested by the members of the experts committee, some amendments were made, and the final version of the EDA-5 in Portuguese (BR/PT) was provided (available at www.eda5.org).

### Method validation

### Results

## Forward translation and harmonization

The forward translation of the EDA-5 into Brazilian and European Portuguese resulted in the BR and PT versions of the interview. They were reviewed multiple times to reach a consensual harmonized version of the instrument with conceptual and semantic equivalence in Brazil and Portugal. While on most occasions, the authors have found specific words or expressions that could be understood in both contexts, sometimes it was difficult to achieve a consensus due to the language's semantic and grammatical differences.

During the harmonization process, several challenges related to the differences in translating the DSM-5 FED terms emerged as a result of the official DSM-5 translation in each country (see Table 1). For example, "binge eating episodes" means "episodio de compulsão alimentar" in Brazilian Portuguese and "episodio de ingestão alimentar compulsiva" in European Portuguese. After discussion between the translators and reviewers, a consensus was reached for using the Brazilian Portuguese expression, as it could be understood in both contexts. However, when it was not possible to achieve an agreement, we exhibited both expressions in the instrument, highlighting which one must be used by interviewers from Brazil and Portugal, signaling with the acronyms (BR) and (PT), respectively.

In addition to the vocabulary of the ED, there were complex grammatical issues to solve. Nevertheless, some words and expressions could not be unified. In such cases, they were both included in the text separated by a slash ["/"] and should be interpreted based on the grammar rules of each country (e.g., controle/controlo; vômito/vómito). Finally, as the personal pronoun "you" (in Brazilian Portuguese: "você") is not frequently used in European Portuguese, it was displayed between brackets [e.g., (você)] in the sentences to be read only by the Brazilian Portuguese native speakers. Other examples of the harmonization process between the BR and PT versions of the EDA-5 are shown in Table 2.

**Table 2**Comparison of Brazilian Portuguese translation, European Portuguese translation, and the synthesis version.

| Question | English   | Brazilian Portuguese   | European Portuguese   | Synthesis version  |
|----------|---|--|---|--|
| 1        | To begin, please enter information  | Para iniciar, por favor entre com<br>a informação  | Para começar, por favor,<br>introduza a informação  | Para iniciar, por favor, introduza<br>a informação   |
| 2        | Is there a disturbance in eating or eating-related behavior?  | Existe um transtorno da alimentação ou do comportamento alimentar?   | Existe uma perturbação da alimentação ou do comportamento alimentar?  | Existe um transtorno/<br>perturbação da alimentação ou<br>do comportamento alimentar?  |
| 3        | Can you describe a typical day of eating? When and what do you eat?   | Pode descrever um dia típico de alimentação? Quando e o que come?  | Pode descrever um dia típico em termos alimentares? Quando e o que come?  | Pode descrever um dia típico de alimentação? Quando e o que come?  |
| 4        | Is the problem with your eating getting in the way of your day-to-day functioning? For example, at work, at school, or in your relationships? | O problema com sua alimentação<br>está atrapalhando o seu<br>funcionamento diário? Por<br>exemplo, no trabalho, na escola<br>ou em seus relacionamentos? | O seu problema alimentar<br>interfere com o seu<br>funcionamento e rotinas do<br>dia-a-dia? Por exemplo, no<br>trabalho, na escola ou nas suas<br>relações? | O problema com a sua<br>alimentação interfere com o seu<br>funcionamento diário? Por<br>exemplo, no trabalho, na escola<br>ou nos relacionamentos? |
| 23       | Do you make yourself vomit, or<br>overuse (misuse) laxatives,<br>diuretics or other medications?  | Você induz vômito, ou faz uso<br>excessivo (uso indevido) de<br>laxantes, diuréticos ou outros<br>medicamentos?  | Provoca o vómito, ou usa<br>excessivamente laxantes,<br>diuréticos, ou outros<br>medicamentos?  | (Você) Induz o vômito/vómito,<br>ou faz uso excessivo (indevido)<br>de laxantes, diuréticos ou outros<br>medicamentos?                             |
| 23       | Yes: the individual engages in purging behaviors  | Sim: o indivíduo se engaja em comportamentos de purgação   | Sim: o indivíduo envolve-se em comportamentos purgativos  | Sim: o indivíduo apresenta comportamentos purgativos   |
| 44       | How upset have you been about these episodes?   | O quanto você tem estado angustiado com esses episódios?   | Quão perturbado se sentiu acerca desses episódios?  | O quanto (você) tem se sentido<br>aborrecido/a com esses<br>episódios?   |
| 46       | Has the individual experienced significant weight loss?   | O indivíduo já experimentou uma perda de peso significativa?   | O indivíduo teve uma perda de peso significativa?   | O indivíduo já perdeu peso de uma forma significativa?   |

## Back-translation and original author review

The consensus harmonized version of the EDA-5 in Portuguese was back-translated into English and then compared to the original version of the instrument. The translators and reviewers explained to the original instrument's author how the translation and adaptation process was performed. In addition, they clarified the specificities of the Brazilian and European Portuguese and how this was handled in the harmonized version of the interview. No discrepancies were found, indicating the conceptual and semantic equivalence between the harmonized and the original versions of the EDA-5.

## Comprehensibility

The approved harmonized version of the EDA-5 in Portuguese has been submitted to a comprehensibility test. A total of 20 eating disorder experts from Brazil and Portugal (ten from each country) evaluated the comprehensiveness of all items of the instrument. The percentage of items considered clear and confusing by the Brazilian and Portuguese raters is shown in Table 3.

# Brazil

From the 69 items of the EDA-5, only four (5.8%) were considered unclear by more than 20% of the Brazilian experts and then were revised (items 2, 23, 38, and 63). In items 2 and 63, they suggested conceptual changes not related to the translation. Thus, these items were not modified. In item 23 ("(Você) Induz o vômito/vómito, ou faz uso excessivo (indevido) de laxantes, diuréticos ou outros medicamentos?"), it was suggested to be more specific regarding the type of the medication taken ("...medicação para perda de peso"). Although it is an important consideration, we opted to follow the original format of the interview, as this change would not impact the readers ability to understand the question. Finally, 70% of the Brazilian experts considered the item 38 confuse ("Tendo em mente o tipo de episódio que acabou de descrever, em que comeu uma grande quantidade de comida e sentiu essa perda de controle/o..."). This is an introductory statement that pops-up in the screen when the digital version of the interview is used. Therefore, as the comprehensibility test was carried out in paper-and-pencil format, this may have led to a misinterpretation of the item.

# **Portugal**

In Portugal, eight items (11.6%) of the EDA-5 were rated as unclear by more than 20% of the experts (items 2, 3, 7, 8, 11, 23, 37, 38). In item 3 ("Está presente um padrão alimentar anormal (por exemplo, jejum, restrição grave da ingestão, compulsão alimentar, comportamentos purgativos ou está evitando certos alimentos ou texturas de alimentos)?", it was suggested to change the verb tense of "evitar" (in English, "avoid"). We agreed with this suggestion and replaced "está evitando" with "evita". Also, in item 7, the sentence "(Você) Sente alguma preocupação de que, caso comece a ganhar peso, continuará a ganhar peso e ficará gordo/a?" was rephrased to "Preocupa-se que no caso de começar a ganhar peso, esse aumento seja contínuo e acabará por ficar gordo/a?" to avoid repeating the expression "ganhar peso" (in English, "weight gain") and make the sentence more clear. Finally, as the Brazilian experts, those from Portugal suggested changes that would impact the structure of the original version of the EDA-5 (e.g., items 2, 8, 11, 23, 37, and 38). Thus, these items were not modified.

**Table 3**Comprehensibility of items of translating EDA-5 to Portuguese in Brazil and Portugal.

| Item       | Brazil      |           | Portugal    |            |
|------------|-------------|-----------|-------------|------------|
|            | Clear       | Unclear   | Clear       | Unclea     |
| Introdução | 100%        | 0%        | 100%        | 0%         |
| 1          | 90%         | 10%       | 100%        | 0%         |
| 2          | 70%         | 30%       | 70%         | 30%        |
| 3          | 80%         | 20%       | 70%         | 30%        |
| 4          | 90%         | 10%       | 100%        | 0%         |
| 5          | 100%        | 0%        | 100%        | 0%         |
| 5          | 100%        | 0%        | 90%         | 10%        |
| 7          | 100%        | 0%        | 70%         | 30%        |
| 8          | 100%        | 0%        | 70%         | 30%        |
| 9          | 100%        | 0%        | 80%         | 20%        |
| 10         | 90%         | 10%       | 80%         | 20%        |
| 11         | 90%         | 10%       | 70%         | 30%        |
| 12         | 100%        | 0%        | 100%        | 0%         |
| 13         | 90%         | 10%       | 90%         | 10%        |
| 14         | 90%         | 10%       | 90%         | 10%        |
| 15         | 90%<br>100% | 10%       | 100%<br>90% | 0%         |
| 16<br>17   | 100%        | 0%<br>0%  | 90%         | 10%<br>10% |
| 18         | 90%         | 10%       | 80%         | 20%        |
| 19         | 100%        | 0%        | 90%         | 10%        |
| 20         | 90%         | 10%       | 100%        | 0%         |
| 20<br>21   | 100%        | 0%        | 90%         | 10%        |
| 22         | 100%        | 0%        | 90%         | 10%        |
| 23         | 70%         | 30%       | 60%         | 40%        |
| 24         | 100%        | 0%        | 80%         | 20%        |
| 25         | 100%        | 0%        | 90%         | 10%        |
| 26         | 90%         | 10%       | 90%         | 10%        |
| 27         | 90%         | 10%       | 90%         | 10%        |
| 28         | 90%         | 10%       | 80%         | 20%        |
| 29         | 90%         | 10%       | 90%         | 10%        |
| 30         | 90%         | 10%       | 100%        | 0%         |
| 31         | 90%         | 10%       | 100%        | 0%         |
| 32         | 100%        | 0%        | 100%        | 0%         |
| 33         | 90%         | 10%       | 90%         | 10%        |
| 34         | 90%         | 10%       | 100%        | 0%         |
| 35         | 90%         | 10%       | 100%        | 0%         |
| 36         | 100%        | 0%        | 100%        | 0%         |
| 37         | 90%         | 10%       | 70%         | 30%        |
| 38         | 30%         | 70%       | 70%         | 30%        |
| 39         | 100%        | 0%        | 90%         | 10%        |
| 40         | 100%        | 0%        | 100%        | 0%         |
| 41         | 100%        | 0%        | 100%        | 0%         |
| 42         | 100%        | 0%        | 100%        | 0%         |
| 43         | 100%        | 0%        | 100%        | 0%         |
| 44         | 90%         | 10%       | 80%         | 20%        |
| 45         | 80%         | 20%       | 90%         | 10%        |
| 46         | 100%        | 0%        | 90%         | 10%        |
| 47         | 100%        | 0%        | 100%        | 0%         |
| 48<br>49   | 90%         | 10%       | 90%         | 10%        |
| 49<br>50   | 90%<br>100% | 10%<br>0% | 80%<br>90%  | 20%<br>10% |
|            |             |           |             |            |
| 51<br>52   | 100%<br>90% | 0%<br>10% | 80%<br>100% | 20%<br>0%  |
| 53         | 90%         | 10%       | 100%        | 0%         |
| 54         | 80%         | 20%       | 100%        | 0%         |
| 55         | 90%         | 10%       | 100%        | 0%         |
| 56         | 100%        | 0%        | 100%        | 0%         |
| 57         | 100%        | 0%        | 100%        | 0%         |
| 58         | 100%        | 0%        | 80%         | 20%        |
| 59         | 100%        | 0%        | 100%        | 0%         |
| 50         | 100%        | 0%        | 100%        | 0%         |
| 61         | 80%         | 20%       | 100%        | 0%         |
| 62         | 80%         | 20%       | 100%        | 0%         |
| 63         | 70%         | 30%       | 100%        | 0%         |
| 64         | 80%         | 20%       | 100%        | 0%         |
| 65         | 80%         | 20%       | 100%        | 0%         |
| 66         | 90%         | 10%       | 100%        | 0%         |
| 67         | 90%         | 10%       | 100%        | 0%         |
| 68         | 100%        | 0%        | 100%        | 0%         |
|            | 100%        | 0%        | 100%        | 0%         |

### Contextualizing the EDA-5

The present study aimed to translate and cross-culturally adapt the EDA-5 into Brazilian and European Portuguese. To the best of our knowledge, this is the first diagnostic interview for feeding and eating disorders with a harmonized version available for use both in Brazil and Portugal. The translation and cross-cultural adaptation was performed following the recommendations of widely used guidelines [10–12]. In addition, the harmonized Portuguese version of the EDA-5 demonstrated conceptual and semantic equivalence to the original instrument and was well understood by eating disorders experts from both countries.

The EDA-5 was developed in 2015 and adapted to different languages, including Norwegian [7,8]. However, the paucity of information regarding the cross-cultural adaptations of harmonized versions of assessment instruments in Brazilian and European Portuguese limits the comparison of our results. Nevertheless, in 2021, Couto et al. translated and cross-culturally adapted the Debriefing Assessment for Simulation in Healthcare (DASH) into Brazilian and European Portuguese [13]. This instrument was designed to assist in evaluating faculty skills in healthcare simulation debriefings [13]. Although the authors followed the same cross-cultural adaptation guidelines of the present study, the back translation was not performed by a native English speaker. The author reported that 70 recommendations had been made in the comprehensibility test, of which 65 (91.4%) were applied to the approved harmonized Portuguese version of the DASH [13]. Overall, the discrepancies were related to the translation of the terms and syntax [13].

## Challenges

Although Brazil and Portugal speak the same language, there has been a mixture of languages throughout history, resulting in marked grammatical and linguistic differences among these countries. For instance, there are some words with the same spellings but different meanings in each context, as well as words that exist only in Brazil or Portugal (e.g., in Portugal, the word surname is "apelido" and in Brazil, it is "sobrenome". For Brazilians, the word "apelido" means nickname). In 1990, the Portuguese Language Orthographic Agreement was signed aiming to create an unified orthography to be used by all the countries that have Portuguese as their official language [14]. Despite the changes implemented, substantial linguistic differences can still be observed. Taken together, these findings highlight the challenge related to developing a consensual harmonized translation of instruments into Portuguese.

# Practical applications of the EDA-5

FED are frequent and impairing mental health conditions associated with stigma and underdiagnosis. The EDA-5 is the first digital diagnostic interview developed to evaluate such conditions based on the DSM-5 criteria. Its design prioritizes ease and efficiency to ensure minimal burden for the interviewer and participant. As a free digital tool with minimal training requirements, it can be used by a wide range of healthcare professionals from different settings. Thus, the harmonized Portuguese (BR/PT) version of the EDA-5 will benefit psychiatrists, clinicians, nurses, nutritionists, from Brazil and Portugal, to assess and diagnose FED, as well as reduce the treatment delay related to these clinical conditions.

# Limitations

This study has some limitations. First, using a paper-and-pencil format of the EDA-5 may have influenced the comprehensibility of some items. However, this change was needed due to operational issues. Second, the comprehensibility test was not performed in a sample of patients with ED. However, as a clinical interview, EDA-5 will be administered by healthcare professionals who can clarify any doubts if needed. This study's strengths were: 1) to follow the recommendations of international guidelines for translation and cross-cultural adaptation, such as using a native English speaker to perform the back-translation and having a multi-disciplinary experts committee rating the comprehensibility of all the items of the instrument; and 2) to develop a consensual harmonized Portuguese (BR/PT) of a FED diagnostic interview.

# **Ethics statements**

This study received approval by the ethics and research committee from the Institute of Psychiatry of the Federal University of Rio de Janeiro/ IPUB – UFRJ, under the registration number 71707823.2.0000.5263. This study was also approved by the Ethics Committee for Research in Social and Human Sciences (CEICSH) of the University of Minho (CEICSH 155/2023).

# Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

# CRediT authorship contribution statement

Cassia de C. Moulin: Data curation, Formal analysis, Investigation, Methodology, Validation, Visualization, Writing – original draft, Writing – review & editing. Rita Ramos: Data curation, Formal analysis, Investigation, Methodology, Validation, Visualization, Writing – review & editing. Carlos Eduardo Ferreira de Moraes: Formal analysis, Resources, Writing – review & editing. B. Timothy

**Walsh:** Conceptualization, Supervision, Writing – review & editing. **José Carlos Appolinário:** Conceptualization, Methodology, Project administration, Resources, Validation, Supervision, Writing – review & editing. **Paulo P.P. Machado:** Conceptualization, Methodology, Project administration, Resources, Validation, Supervision, Writing – review & editing.

## Data availability

Data will be made available on request.

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