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Original Article

Translation and Cross-cultural Adaptation of the Oral Health Literacy Assessment-Spanish to Brazilian Portuguese

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Abstract

Objective: To translate the Spanish version of the instrument to measure oral health literacy - Oral Health Literacy Assessment-Spanish (OHLA-S) - into Portuguese (Brazilian) and perform their cross-cultural adaptation. **Material and Methods:** OHLA-S evaluates the level of oral health literacy from questions measuring pronunciation and comprehension skills of 30 dental terms concerning the etiology, anatomy, prevention and treatment of oral conditions. A committee of experts was created to evaluate all the steps of the process, right from the original version, through to the final one. The steps were: initial translation into Portuguese language by two Spanish teachers, back-translation into Spanish by two native Spanish speaking, review by the committee, and pre-test. For the pre-test of cross-cultural adaptation, the alternative "did not understand" was added to each item of the tool. The instrument was applied to a sample of 20 adults. **Results:** In the initial translation, some differences were observed between the translated versions, and after the committee had reviewed these versions, a few words were replaced by other synonyms to enable better understanding of the instrument by the population. When the back-translation was compared with the original version, the results were very satisfactory and there was no need to make any further change or replacement. In the pre-test, the version of the tool Oral Health Literacy Assessment-Brazilian (OHLA-B) was very well understood by the studied population and there was no need for other cultural adaptations. **Conclusion:** OHLA-B proved to be easily understood by Brazilian adults and could be an important tool for measuring levels of oral health literacy.

Keywords: Adult; Health Literacy; Surveys and Questionnaires; Translating.

Introduction

Health literacy presents several definitions, among them, "the degree to which individuals are able to obtain, process and understand basic health information and services necessary to make appropriate health decisions" [1]. In dentistry, oral health literacy (OHL) is a field that has several potentialities to be investigated, and studies evaluating the relationship between OHL and oral health status began to be developed less than a decade ago [2-4].

One of the ways to evaluate health literacy is through a word recognition test. This method requires the individual to have certain abilities to read and understand a word from an individual list, and the method assumes that there is a strong correlation between reading and comprehension skills in the language in question. In it, words are usually displayed in printed form on cards, and the individual is asked to pronounce them. However, one limitation of this reading-only method is that it does not allow the researcher to determine whether the subjects know the meaning of the words, or whether they only have the skills to pronounce them.

Most of the instruments that use word recognition test (functional literacy) for assessing OHL have been developed in the English language, such as the Rapid Estimate of Adult Literacy in Dentistry-30 (REALD-30) [4]. Although these instruments are considered useful and quick tools to investigate OHL, the phonetic structure of the Spanish and Portuguese languages, (unlike the English language), was verified to be quite regular; that is to say, a sound usually presents similarity with a letter and vice-versa (correspondence between phonemes and graphemes), whereas in English, there is irregularity between these relations [5-7]. Thus, the simple literal translation of the original word recognition instruments to measure OHL in the Portuguese or Spanish language may generate some measurements that are not as accurate as one would expect them to be [6,7].

To overcome this barrier, some authors developed the Oral Health Literacy Assessment-Spanish (OHLA-S) instrument [8], which is an adaptation of REALD-30 to the Spanish language, and therefore developed to be applied to individuals with high grapheme-phoneme correlation in the source language (such as Spanish and Brazilian Portuguese). The OHLA-S, unlike REALD-30, also has a comprehension test of words that - according to the author - aim to improve the psychometric properties of the instrument to measure OHL in the Spanish language [8].

Therefore, it is important for the instrument not to be literally translated into the language of the country where it will be used; the translators must take into account the cultural characteristics and linguistic contexts in which instrument will be used, as these factors may influence the validity and reliability of the reports obtained. In addition, it must be easily administered and its application must not require much time [9]. Several methods have been proposed for the process of cultural adaptation of questionnaires, ranging from direct translation of the instrument to a methodology that comprises several steps in the translation/retranslation process [10].

Although a growing number of instruments have been developed to assess OHL in recent years in several countries, up to mid-2015, there were no validated instruments for measuring this

attribute in Brazil. Thus, previous authors translated and validated the Portuguese REALD-30, and created the Brazilian Rapid Estimate of Adult Literacy (BREALD-30) - an instrument that aims to evaluate functional oral health literacy of individuals – that has demonstrated good reliability and excellent reproducibility [11]. Despite its qualities, it is important to develop and test other instruments that present different ways of evaluating literacy, in order to provide professionals and researchers with reliable tools to measure oral health literacy in different contexts and for different purposes.

In view of the foregoing, the purpose of the present study was to translate and perform transcultural validation of the OHLA-S into the Brazilian Portuguese language, thereby generating the OHLA-B instrument.

Material and Methods

Ethical Aspects

The Piracicaba Dental School Research Ethics Committee, University of Campinas (FOP-UNICAMP), approved this study, under protocol number 140/2014. All volunteers signed the Term of Free and Informed Consent (TFIC). It is important to note that before the translation process began, the permission of the author of the original instrument was requested (Jessica Y. Lee).

Instrument

OHLA-S instrument was developed based on 30 words related to the etiology, anatomy, prevention and treatment of various oral conditions, organized in ascending order of difficulty [8]. It uses the same words as those from the vocabulary of REALD-30 [4], but for each word a complementary test is applied to measure the subjects' comprehension of these words (comprehension test). Thus, participants are offered two other words for each term of the REALD-30, in order to gauge their understanding of the term [8]. One of the words offered corresponds to, and is directly associated with the sense of the word used in REALD-30. The other word - 'confounder' - is not linked to the sense of the word in the test in any way whatever, or has an opposite meaning. For example, for the term "sugar," the corresponding word is "sweet" and the confounder is "salty." During instrument application, the individuals are presented with a card containing a vocabulary term and asked to read it aloud. At this point, the examiner evaluates the correct pronunciation. After listening to the word being read, the examiner applies the word comprehension test, alternately saying two other words: one with a corresponding meaning and another with a confusing one. The volunteers (examined individually) then choose the word they deem to be correctly associated with the dental term. Thus, the comprehension test enables the researchers to evaluate whether the individual understood the meaning of the term, in addition to simply being able to pronounce it, thereby revealing more complex OHL skills [8].

After performing some statistical analyses, the authors obtained better psychometric properties when using only 24 of the 30 initial words of the REALD, and therefore, recommend that

the instrument be applied in this way. The scores can vary from 0 to 24 points, with one point being assigned to each item of the instrument when the pronunciation and comprehension tests are correct [8]. If one of the tests (pronunciation or comprehension) is incorrect, a zero score is attributed to the item.

Translation and Cultural Adaptation of the Instrument

The translation and cultural adaptation of OHLA-S followed the steps proposed previously [10]: initial translation, retranslation, and review by a committee of experts and pre-test (Figure 1). These standards included the following steps: (1) translation with semantic, idiomatic, experimental (empirical) and conceptual equivalence; (2) retranslation by qualified persons; (3) committee: multidisciplinary review of all translations and retranslations; (4) pre-test for equivalence using appropriate techniques; and (5) review of scores weights, if necessary. Figure 1 shows the translation phases of OLHA-S to OHLA-B.

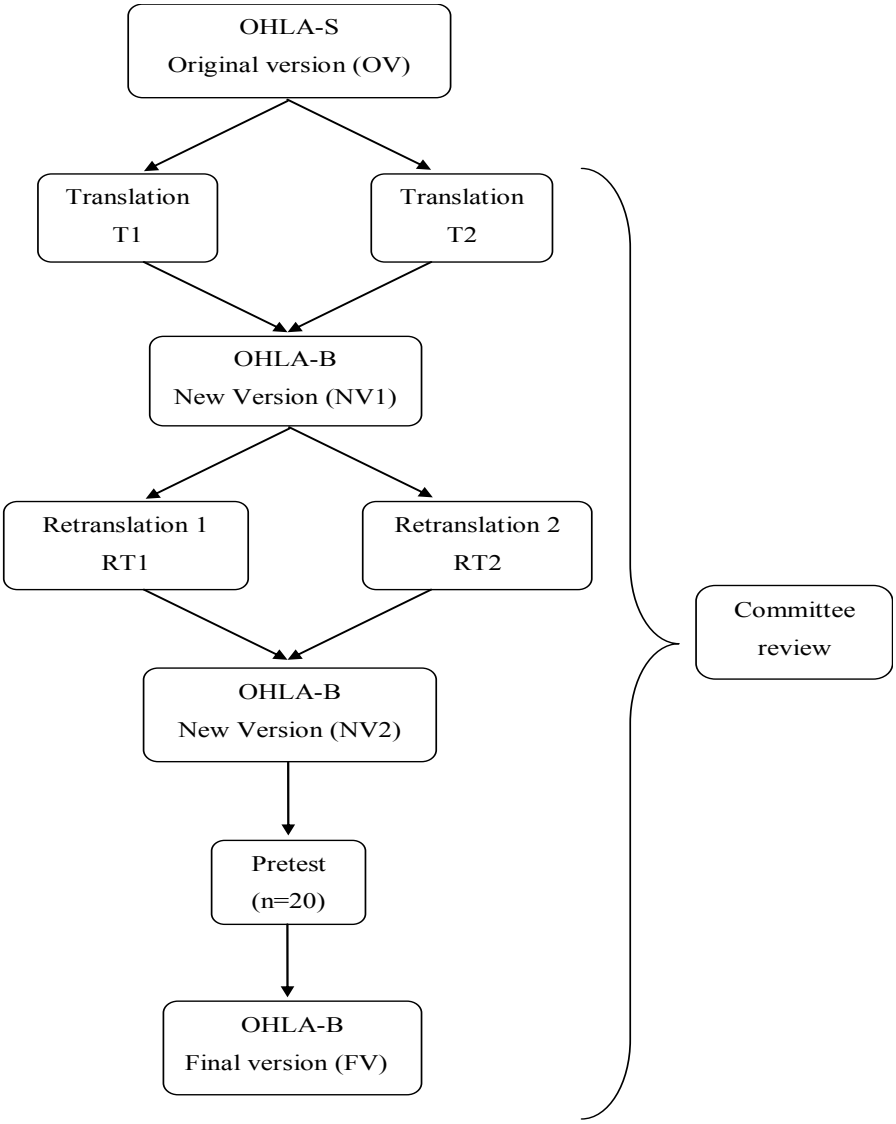

Figure 1.Translation and cultural adaptation phases of the OHLA-S instrument.

Initial Translation

The original version of the questionnaire in Spanish was initially translated into Brazilian Portuguese language by two Spanish teachers, both of whom were aware of the study purpose, emphasizing the conceptual translation rather than the literal translation, generating the versions T1 and T2, translated into Brazilian Portuguese.

Retranslation

The T1 and T2 versions went through reverse translation into Spanish (back-translation) by two native Spanish-speaking translators (original language), who did not participate in the first translation stage, and who did not have access to the original instrument. Thus, the retranslated versions for Spanish (RT1 and RT2) were obtained. The purpose of reverse translation was to compare the RT1 and RT2 versions with the original instrument in the Spanish language.

Committee Review

The Brazilian Portuguese versions (T1 and T2), the retranslated versions (RT1 and RT2), as well as the original instrument in Spanish were submitted to evaluation by a committee of experts composed of four dentists and a Portuguese teacher. All members were aware of the project purposes. The committee evaluated all process stages from the original to the final version. By consensus, the differences found in the translations were reduced; the best terms and words for all questions were selected, and adapted to the linguistic cultural universe of the Brazilian Portuguese language. This step consisted of the following aspects [12]:

- Semantic equivalence: grammatical and vocabulary equivalence evaluation. Words that did not have a literal translation with similar meaning were translated into Portuguese terms that showed equivalence of meaning.
- Idiomatic equivalence: translations of certain idiomatic expressions that could not be done literally, but should be equivalent in their meaning.
- Experimental or cultural equivalence: coherence between the terms used and the situations experienced by the population for which it was intended, within its cultural context.

Pre-Test

In order to evaluate the cultural equivalence of the instrument, the Brazilian Portuguese version of OLHA-S (OHLA-B) was applied to 20 adult, users of a Primary Health Care Unit in Piracicaba, SP, Brazil, a number considered satisfactory for this type of Test [13]. The majority of participants were female (55%), with a mean age of 42.5 years (SD ± 14.1), and a mean of 11.4 (SD ± 4.3) years of study. Before the pre-test started, the volunteers were instructed to answer, "I did not understand" if they did not understand any term / word of the instrument. According to previous authors, the percentage of "I do not understand" answers must be less than 15% for an instrument to be considered culturally adapted [10]. If the established limit is exceeded, the instrument must

undergo a new process of cultural adaptation until no question is considered incomprehensible by more than 15% of the participants.

Results

Initial Translation and Retranslation

When comparing the two initial translations words list (T1 and T2) by two Spanish-speaking teachers, few divergences were observed between them (Table 1): in the third line, in the corresponding word "limpio" translated as " limpo ", the choice was to change its grammatical class from noun to verb and then to use "limpar". The same reasoning was applied to the translator'a confusing word "enjuague", translated as "enxágue"; and changed to "enxaguar". In the fourth line, the confounding word "sabon" had been translated in two ways: "sabão" and "sabonete". However, as opposed to "crema dental" - a word that refers to a personal hygiene product, we opted for the use of "sabonete". In line 12, the confounding word "reemplazar " was translated by the first translator as "repor" or "substituir", and by the second only as "substituir". The committee of experts chose to use the word "substituir", since it was common to both versions, and was considered culturally appropriate to our language. Other changes were: "incipiente" (line 19), which in the original instrument had the corresponding term "temprano" and confusing term "tarde". In this study it was agreed to use the Portuguese terms "inicial" and "avançado", because they were better suited to the dynamics of dental caries evolution. The last difference noted was in line 22 in the word "taladrar", translated as "broca" or "furar", since was the opposite of "cobrir" - the committee selected the term "furar".

After evaluating the translations and consensus reached by the committee of experts, a new version (NV1) of the instrument was then generated, which was submitted to retranslation by two Spanish natives. The retranslations (RT1 and RT2) were considered quite satisfactory, since there were few differences noticed in relation to the original version. As an example of the small differences: in line 4 it was noted that "pasta de dente" was retranslated by "crema dental" - a synonym for "pasta de dientes". In line 10, "ranger" was reverted in "crujir" as in the original version and still by its synonym "rechinar". In line 11, "muco" remained "muco" instead of "mucosidad". In line 12 "tirar" has become the initial "sacar" or even "remover". In line 16, "mole" changed to "blando" not "suave". Also, the word from line 22 "furar" was translated as "agujerear" and "perforar" - synonyms that did not, however, compromise the understanding of the initial term in question "taladrar".

During these stages, the semantic rather than the literal equivalence between the terms was valued, because the literal term is not always more advantageous for expressing new population concepts or situations that one wishes to study [10,14-19].

Table 1.The OHLA-B results of initial translations (T1 and T2) and back-translations (RT1 and RT2).

Main word						Corresponding word						Confounding word					
OV	T1	T2	NV1	RT1	RT2	OV	T1	T2	NV1	RT1	RT2	OV	T1	T2	NV1	RT1	RT2
1	x	x	==	x	x	1	x	x	==	x	x	1	x	x	==	x	x
2	x	x	==	x	x	2	x	x	==	x	x	2	x	x	==	x	x
3	x	x	==	x	x	3	x	x	≠	x	x	3	x	x	≠	x	x
4	x	x	==	x	x	4	x	x	==	y	y	4	xy	x	≠	x	x

5	x	x	==	x	x	5	x	x	==	x	x	5	x	x	==	x	x
6	x	x	==	x	x	6	x	x	==	x	x	6	x	x	==	x	x
7	x	x	==	x	x	7	x	x	==	x	x	7	x	x	==	x	x
8	x	x	==	x	x	8	x	x	==	x	x	8	x	x	==	x	x
9	x	x	==	x	x	9	x	x	==	x	x	9	x	x	==	x	x
10	x	x	==	x	x	10	x	x	==	y	x	10	x	x	==	x	x
11	x	x	==	x	x	11	x	x	==	x	x	11	x	x	==	y	y
12	x	x	==	x	x	12	x	x	==	x	y	12	xy	y	≠	x	x
13	x	x	==	x	x	13	x	x	==	x	x	13	x	x	==	x	x
14	x	x	==	x	x	14	x	x	≠	y	y	14	x	y	≠	y	y
15	x	x	==	x	x	15	x	x	==	x	x	15	x	x	==	x	x
16	x	x	==	x	x	16	x	x	==	x	x	16	x	x	==	y	y
17	x	x	==	x	x	17	x	x	==	x	x	17	x	x	==	x	x
18	x	x	==	x	x	18	x	x	==	x	x	18	x	x	==	x	x
19	x	x	==	x	x	19	x	x	≠	y	y	19	x	x	≠	y	y
20	x	x	==	x	x	20	x	x	==	x	x	20	x	x	==	x	x
21	x	x	==	x	x	21	x	x	==	x	x	21	x	x	==	x	x
22	x	x	==	x	x	22	x	x	==	x	x	22	y	x	≠	w	z
23	x	x	==	x	x	23	x	x	==	x	x	23	x	x	==	x	x
24	x	x	==	x	x	24	x	x	==	x	x	24	x	x	==	x	x
25	x	x	==	x	x	25	x	x	==	x	x	25	x	x	==	x	x
26	x	x	==	x	x	26	x	x	==	x	x	26	x	x	==	x	x
27	x	x	==	x	x	27	x	x	==	x	x	27	x	x	==	x	x
28	x	x	==	x	x	28	x	x	==	x	x	28	x	x	==	x	x
29	x	x	==	x	x	29	x	x	==	x	x	29	x	x	==	x	x
30	x	x	==	x	x	30	x	x	==	x	x	30	x	x	==	x	x

Subtitle: OV: original version; T: translation; RT: retranslation; NV: new version; == NV without changes; ≠ NV with change made; x: without changes/ differences between T1 and T2/ RT1 and RT2 results; y,z,w: changes/ differences between T1 and T2/ RT1 and RT2 results.

Committee Review

Before establishing the final version, the committee of experts emphasized that there were three words in the instrument which could be considered ambiguous in Brazilian Portuguese. These words were "polpa", with the possibility of being considered by individuals as meaning either the tooth layer or part of a fruit; "esmalte" - that could be interpreted by the volunteers as both the tooth coating, or material for painting, finishing or even nail varnish. Finally, the word "celulite" - Brazilian colloquial term used by the general population to refer to a fat deposit, but in the medical-dental universe refers to an infection. The committee decided to keep these original terms in the instrument translated into the Portuguese language, since the ambiguity of meaning would be elucidated in the comprehension tests (Table 2).

Table 2. Main, corresponding and confounding words of the Spanish (OHLA-S) and the Brazilian Portuguese (OHLA-B) versions.

	OHLA Main words		OHLA Corresponding words		OHLA Confounding words	
	Spanish	Brazilian Portuguese	Spanish	Brazilian Portuguese	Spanish	Brazilian Portuguese
1	Azúcar	Açúcar	Dulce	Doce	Amargo	Amargo
2	Fumar	Fumar	Pulmón	Pulmão	Estómago	Estômago
3	Hilo Dental	Fio Dental	Limpio	Limpar	Enjuague	Enxaguar
4	Cepillar	Escovar	Pasta de dientes	Pasta de dente	Jabón	Sabonete
5	Pulpa	Polpa	Nervio	Nervo	lengua	Língua
6	Flúor	Flúor	Proteger	Proteger	Destruir	Destruir
7	Frenos	Braquetes	Alinear	Alinhar	Torcer	Entortar
8	Genética	Genética	Familia	Família	Amigo	Amigo
9	Restauración	Restauração	Tratamiento	Tratamento	Instrumento	Instrumento
10	Bruxismo	Bruxismo	Rechinar	Ranger	Tragar	Engolir
11	Absceso	Abscesso	Pus	Pus	Mucosidad	Muco
12	Extracción	Extração	Sacar	Tirar	Reemplazar	Substituir

13	Dentadurapostiza	Dentadura	Sintético	Sintética	Natural	Natural
14	Esmalte	Esmalte	Superfície	Na Superfície	Adentro	No Interior
15	Dentición	Dentição	Dientes	Dentes	Boca	Boca
16	Cálculo	Cálculo	Duro	Duro	Suave	Mole
17	Encía	Gengiva	Rosada	Rosada	Blanca	Branca
18	Maloclusión	Má-oclusão	Mordida	Mordida	Herida	Ferida
19	Incipiente	Incipiente	Temprano	Inicial	Tarde	Avançado
20	Caries	Cárie	Cavidad	Cavidade	Úlcera	Úlcera
21	Periodontal	Periodontal	Encías	Gengiva	Paladar	Paladar
22	Sellador	Selante	Cubrir	Cobrir	Taladrar	Furar
23	Hipoplasia	Hipoplasia	Defecto	Defeito	Intacto	Intacto
24	Halitosis	Halitose	Aliento	Hálito	Tos	Tosse
25	Analgésico	Analgésico	Aspirina	Aspirina	Vitamina	Vitamina
26	Celulitis	Celulite	Infección	Infecção	Hemorragia	Hemorragia
27	Fístula	Fístula	Drenaje	Drenagem	Verruga	Verruga
28	Temporomandibular	Temporomandibular	Articulación	Articulação	Cuello	Pescoço
29	Hiperemia	Hiperemia	Sangre	Sangue	Saliva	Saliva
30	Apicectomia	Apicectomia	Raíz	Raiz	Corona	Coroa

Discussion

An instrument can only be considered valid if it is capable of adequately capturing a given underlying concept [14]. Furthermore, a translated instrument must be able to obtain, in the culture to which it has been adapted, the same effect as that which the original instrument obtained in the context in which it was created. The lack of cross-cultural equivalence compromises the validity of the information collected, making it impossible to use the instrument to study a concept correctly [15]. This is why researchers have developed standardized protocols to try to minimize the loss of the original characteristics of instruments when translating them into another language [10,16-17]. In the present study, the methodology suggested by some authors was used in developing the cross-cultural adaptation of the Brazilian Portuguese version of the OHLA-S, generating OLHA-B [10].

The results showed that OHLA-B was well understood by the 20 individuals who participated in this study. The level of misunderstanding did not exceed 15% in any of the 30 questions, and therefore, it was not necessary to revise the instrument. The final version was then approved by the committee of experts, and the items were considered clear and easy to understand.

Studies that have used functional health literacy tools have verified that individuals who had better ability to recognize words from the medical universe, had fewer difficulties in passing through health systems [20] and also had the best health results [21]. However, the majority of these instruments were developed in the English language, which has a phonetic structure, differently from Brazilian Portuguese, and has a strong grapheme-phoneme correlation [22]. This feature often enables individuals to correctly pronounce a term without necessarily understanding it, a fact that leads to failure in the assessment of literacy skills. Thus, the OHLA-B instrument, incorporating a word comprehension test, brings psychometric innovations and the possibility of obtaining more valid evaluations about the individual`s OHL level in relation to the instruments that measure functional oral health literacy based on word-reading tests only.

In 2013, the World Health Organization (WHO) published an important paper in recommending that health literacy research should be conducted to support effective interventions [23]. In addition, this was one of the contributions of this study: to carry out cross-cultural

adaptation of a tool for measuring oral health literacy to be applied in Brazilian adults with the intention of assisting research agendas and service planning.

OLHA-B is at the stage of a series of psychometric tests in order to evaluate its validity, dimensionality and associations with predictive variables. In this sense, the present study occupies an innovative and promising role in the field of oral health literacy; a relevant subject and one little explored in Brazil, since to date, there was only one instrument for measuring OHL, the Brazilian Rapid Estimate of Adult Literacy in Dentistry (BREALD-30) [11].

Conclusion

OHLA-B was shown to be easy to understand by Brazilian adults and may be an important instrument for measuring oral health literacy.

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