Patient-Reported Outcomes

The Brazilian Portuguese Version of the DISCERN Instrument: Translation Procedures and Psychometric Properties

Patricia Logullo, PhD [1,2,3,*], Maria Regina Torloni, MD, PhD [1,2], Carolina de O. C. Latorraca, MSc [1,2], Rachel Riera, MD, PhD [1,2,4]

[1]Discipline of Evidence-Based Medicine, Escola Paulista de Medicina, and Post-Graduation Program of Evidence-Based Health, Universidade Federal de São Paulo, São Paulo, Brazil; [2]Cochrane Brazil, São Paulo, Brazil; [3]EQUATOR Network, University of Oxford, Oxford, England, UK; [4]Center of Health Technological Assessment, Instituto Sírio-Libanês de Ensino e Pesquisa, Hospital Sírio-Libanês, São Paulo, Brazil

ABSTRACT

Objectives: To report on the translation procedures and psychometric properties of the DISCERN tool in Brazilian Portuguese. **Methods:** Three people translated the DISCERN from English into Brazilian Portuguese. A committee of experts and community representatives evaluated the quality of the 3 versions in 2 online voting rounds. Two native speakers back-translated the questionnaire into English. We compared these versions to the original DISCERN and made small adjustments. The final Brazilian Portuguese version of DISCERN was tested twice by journalism students to evaluate the quality of a text about smoking cessation treatments. We evaluated participants' health literacy with the Short Assessment of Health Literacy for Portuguese-Speaking Adults (SAHL-PA) tool, assessed the internal consistency of the translated questionnaire with the Cronbach test, and measured its reproducibility with the intraclass correlation coefficient (ICC). We then investigated the relationship between DISCERN and SAHL-PA scores and demographic variables. **Results:**

The participants (n = 126) had no difficulty in using the questionnaire. Cronbach's alpha was 0.865 (95% confidence interval [CI], 0.826-0.898), and the ICC between the 2 evaluations was 0.845 (CI 0.717-0.912). The mean health literacy of the participants was adequate. There was no correlation between the DISCERN score and the SAHL-PA score, age, or sex ($P > .05$). **Conclusions:** The Brazilian Portuguese version of the DISCERN questionnaire has excellent internal consistency and good reproducibility. The evaluators' ages, sex, and health literacy did not interfere with the score resulting from the evaluation of the quality of the text.
Keywords: adherence to treatment, communication products, communication, health consumers, information for patients, lay people health dissemination, laypeople, quality evaluation, text quality

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Introduction

People are continually receiving or seeking information and advice about health habits, behaviors, or interventions (eg, treatments, prevention measures), either passively or actively, by conducting searches on the Internet, going to libraries, and so on.[1-3] Information is important for any choice related to health, from brushing one's teeth to choosing complex cancer treatments,[1,4] and the quality of this information is crucial to making informed decisions. Adherence to treatment is an active process in which the patient or health consumer weights risks and benefits to make a decision.[5-7] Good communication is part of this process[1]; therefore it is important to use objective tools to evaluate the quality of health information available to patients,[1,3,8] bearing in mind that other factors may also interfere with the adherence to healthy habits or choices.[5-7,9,10]

There are many tools to evaluate texts about health,[11-13] but most publications do not provide clear information about how these instruments were developed and validated and few provide information about their psychometric properties.[11] DISCERN is a validated instrument designed to provide people with a way of evaluating the quality of written material on health available on

the internet or in printed form.[8] Over the last 20 years, this instrument has been used to evaluate texts for patients on numerous health issues or areas, applied by the end-users themselves or by patient associations, medical societies, and health professionals.[11,14-17]

The DISCERN tool has been translated and validated in Spanish[18] and German.[19] There are no tools to objectively assess the quality of health texts in Brazilian Portuguese. In this article, we describe the procedures used to translate the DISCERN tool into Brazilian Portuguese and the evaluation of its psychometric properties. A secondary objective of the study was to investigate the association between the participants' quality evaluation scores and their demographic characteristics and health literacy scores.

Methods

Study Design, Setting, and Ethics

We conducted this cross-sectional study in São Paulo, Brazil from 2017 to 2018. The institutional review board of São Paulo Federal University (UNIFESP) approved the study protocol. Study participants signed informed consent forms. We obtained permission to translate and validate the DISCERN tool from its developers[8] (personal communication available upon request). In this article, we followed the best available reporting guidelines, mainly the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist.[20]

Characteristics of the Original Version

DISCERN is a questionnaire developed by researchers from the University of Oxford (UK) and the British Library to evaluate the quality of written consumer health information.[8] It does not intend to evaluate the respondent; instead, the objects of evaluation are texts on health issues, such as newspaper articles, website publications, and leaflets designed for patients. Anyone (including patients, community leaders, health professionals, policy makers, and journalists) can use it as a guide to evaluate the quality of any text containing health information. DISCERN does not intend to assess the layout, attractiveness, or graphical characteristics of the publication, but only the quality of the text printed or published.

The instrument (which can be found at http://www.discern.org.uk/discern_instrument.php) consists of 16 questions divided into 3 sections. The first section (the first 8 questions) assesses the reliability of the information or trustworthiness of the information source. The second (the next 7 questions) assesses the quality of the information on treatment choices. Section 3 consists of 1 last question (the 16th) that rates the overall quality of the text.

For each question, the respondent may choose between 1 of 5 possible scores: a score of 1 indicates a total lack of quality, and a score of 5 indicates a total compliance with the item assessed. Therefore the minimum and maximum total scores are 16 (indicating a low-quality product) and 80, respectively. There are no established cutoffs for what would be considered a "good text."[8]

For each question, the DISCERN instrument provides "hints" or guidance phrases to help the user evaluate the specific text feature. The translation procedures described herein involved the 16 main questions, the 16 hints, the section names, and the possible response alternatives (eg, "no" and "yes" or "low" and "high"), totaling 39 modules of translation.

General Translation Procedures

We followed the 5 steps proposed by Guillemin et al and other authors[21,22] for translating instruments: (1) translation to Brazilian Portuguese, (2) evaluation by an expert committee (see Appendix Table 1 in Supplemental Materials found at http://doi.org/10.1016/j.vhri.2019.09.001), (3) semantics evaluation and consolidation of the translated version, (4) back-translation to English, and (5) second semantics evaluation and adaptation of the final version.

We also added some specific procedures used in different translation and validation studies[23-28] (see Appendix Table 2 in Supplemental Materials found at http://doi.org/10.1016/j.vhri.2019.09.001).

Evaluation of Psychometric Properties

Participants

To detect any serious problems in the comprehension of the questions, we first tested the translated DISCERN on 2 native Brazilian adults, both with a high school level education. Our goal was for participants to adequately understand at least 90% of the questions.[22] These 2 people took 15 to 20 minutes to respond and reported that they were able to understand both the text and the items in the questionnaire totally.

For the evaluation of the psychometric properties of the translated DISCERN, we recruited participants to use DISCERN to evaluate a text in Portuguese. To ensure homogeneity in the educational level of the participants, we invited only Portuguese native-speaking, literate Brazilians with a high school–level education. We used a convenience sample from 2 universities that agreed to collaborate (Pontifícia Universidade Católica de São Paulo [PUC] and Cásper Líbero School). The participants were first-year journalism students in either of these universities. We excluded foreign students, people with a health degree (eg, nurses, physiotherapists) who were doing a second graduate course, and students who did not have time to use the DISCERN questionnaire (which took around 20 minutes to complete) during class.

The participants used the DISCERN questionnaire twice, with a 4-week interval. On the first visit, the main researcher explained the objectives of the study and the importance of assessing the quality of texts about health and invited the students to collaborate by evaluating the quality of a text on smoking cessation treatments using DISCERN. The participants received printed copies of the Brazilian Portuguese DISCERN.

We explained that a lack of clarity in the writing of the questions could lead to modifications of the questionnaire and that they should stop and ask if they had any difficulty in understanding any of the questions.[22,23,28-31] We also asked them to write comments, critiques, and suggestions in their individual questionnaire. We reinforced to the participants that what was being evaluated was the quality of the text, not their competencies. The students answered the questionnaire individually, without help. We established no response time limit.

Two weeks later, we asked the same participants to evaluate the text again, so that we could assess the reproducibility of the translated tool.[23,32]

The Text Evaluated by Participants

The text assessed by the participants to test the DISCERN tool was a plain language summary (PLS) of a Cochrane review translated into Brazilian Portuguese and available in the Cochrane Library (CD009329). A Cochrane PLS presents a summary of the results of a systematic review to inform decisions about health interventions. A PLS is intended for the general nonspecialist audience and should, therefore, be understandable by laypeople in general.[33] This PLS was selected because it was one of the most accessed in the Cochrane Library in 2017 (personal communication).

Health Literacy of Participants

We used the same meetings to evaluate the health literacy of the participants, using the Short Assessment of Health Literacy for

Portuguese-Speaking Adults (SAHL-PA) validated for Portuguese.[34] The SAHL-PA questionnaire, in its short version, contains 18 questions and results in a score between 0 and 18. An individual who answers at least 15 items correctly is considered to have "good health literacy" (ie, the competency and motivation that are necessary to access, understand, and apply health information in life).[35] On the other hand, patients with diabetes, for example, with SAHL-PA scores of less than 15 ("low health functional literacy") tend to present low glycemic control.[36]

We invited the participants in the survey, after completing the DISCERN questionnaire, to also collaborate by responding to the SAHL-PA. For SAHL-PA evaluation, we showed 18 sequential boards containing 3 words each. The participant was told to relate the first word to one of the others, according to the meaning. For example, "osteoporosis" has to do with "bone" and not with "muscle" (the other word present in this board). The interviewer recorded the answers. This was transformed into SAHL-PA scores and registered as a variable.

Data Analysis and Variables

We transferred the written information about the participants' characteristics and their answers to the 16 DISCERN questions into spreadsheets, along with their SAHL-PA scores, where we presented these data descriptively (percentages, means, and standard deviations).

We assessed the internal consistency of the translated DISCERN using Cronbach's alpha. First, we calculated Cronbach's alpha for the whole tool, with a 95% confidence interval (CI), and then we calculated the coefficient after the removal of each question. An alpha of at least 0.70 was considered an indicator of internal consistency of the instrument,[27,37] and a value below 0.20 indicated the removal of the item or domain.[28]

We assessed the reproducibility of the translated DISCERN using the intraclass correlation coefficient (ICC), along with CI, and the answers from the participants who responded twice. We considered the ICC ≥ 0.61 to be adequate (or "substantial"),[27,37-39] although the original DISCERN authors were satisfied with k ≥ 0.40.[8]

We then calculated Spearman correlations between the DISCERN and SAHL-PA scores for all the participants who responded both to DISCERN twice and to SAHL-PA and correlations between the SAHL-PA and each DISCERN item. We did this to verify whether there was any relationship between the quality evaluation of a text and the health literacy of the evaluator. We compared these two variables (the health literacy score and the DISCERN score) to sociodemographic data using the Student's t test.

For tabulation of the data, we built a database on FileMaker (version 12.0), exporting data to spreadsheets (Microsoft Excel for Mac version 16.16.4). One person tabulated data from the printed questionnaires, and someone else checked data typing. The tests were performed with a significance level of 5%. We used the software IBM-SPSS for Windows version 20.0 for the analysis.

Results

Evaluation of the Translations

The first round of evaluation of the translations was completed, with 8 committee members voting, on February 22, 2017. The second round finished on May 10th with 5 participants. A third round, involving only 2 members of the committee, and also finishing on May 10th, resolved issues in 2 questions.

During the first round of evaluation, there was consensus in only 1 module of 39 (the section name S2) (see Appendix Table 2 in Supplemental Materials found at http://doi.org/10.1016/j.vhri.2019.09.001). In the 38 other modules, the votes varied considerably

among T1, T2, and T3, with many members suggesting additional translations. The distribution of votes (scoring) was highly heterogeneous. The committee was divided regarding the best translation for 24 of the 39 modules. The evaluation of the most voted alternatives in these 24 modules showed that:

1) The alternatives were not always correctly written or spelled.
2) Sometimes the alternatives had correct grammar, but they did not match the original sense.
3) Sometimes the alternatives were correct but contained long sentences or words that would not be comprehensible to a layperson with low literacy.

For these situations, a T4 option, which aimed to solve the identified problems, was added to a new electronic form. Appendix Table 3 in Supplemental Materials (found at http://doi.org/10.1016/j.vhri.2019.09.001) shows the evolution of voting from the first to the second round. This round resulted in a fifth version of the translations, T5.

We sent the T5 version to back-translation, resulting in T6 and T7 in English, and compared them. When we compared T5, T6, T7, and the original DISCERN, the meaning was the same in all the modules except for 3, which are described in Appendix Text 2 in Supplemental Materials (found at http://doi.org/10.1016/j.vhri.2019.09.001). In the remaining 36 modules, the translators conveyed the same message in Portuguese as the original DISCERN did in English, and so we considered T5, the Portuguese version, to be adequate. The only differences between T6 and T7 in these 36 modules involved choices between 2 synonyms or the positioning of words in sentences (because word position can vary in English; for example, "date of publication" and "publication date" mean the same thing). These issues were corrected and resulted in the T5 translation of DISCERN, shown in Appendix 1 in Supplemental Materials (found at http://doi.org/10.1016/j.vhri.2019.09.001).

Psychometric Evaluation

Participants

We applied the DISCERN and SAHL-PA to 3 groups of journalism students on August 25, 26, 27, and 28, September 1, 6, and 29, and October 4, 2017. These groups had 156 enrolled students, but not all were present at the visits or agreed to participate. The final number of participants was thus 126 students (less than 2% loss). None of the students were health professionals or foreigners.

Sometimes a student responded to the DISCERN questionnaire but was not available to respond to the SAHL-PA assessment individually with the interviewer. In several of these situations, we moved the SAHL-PA assessment to the second visit. In some cases, the student responded to DISCERN on the first visit but was not present the second time; we used these data for internal consistency but not for ICC calculation. There were also situations in which the student was willing to respond only to the SAHL-PA, without having completed the DISCERN questionnaire. Figure 1 shows how the journalism students participated in the various stages of this study. Appendix Text 3 in Supplemental Materials (found at http://doi.org/10.1016/j.vhri.2019.09.001) shows the feedback from participants.

Table 1 shows the demographic characteristics of the participants. Most (n = 85, 67%) were women. The mean age was 27.5 years, ranging from 18 to 37; only 5 participants were ≥30 years.

Internal Consistency and Reproducibility

The Cronbach's alpha of the translated DISCERN was high: 0.865 (CI 0.826-0.898). Table 2 shows that all the questions on the translated DISCERN contributed similarly to the total score, with Cronbach's alpha coefficients close to each other and all higher than 0.84.
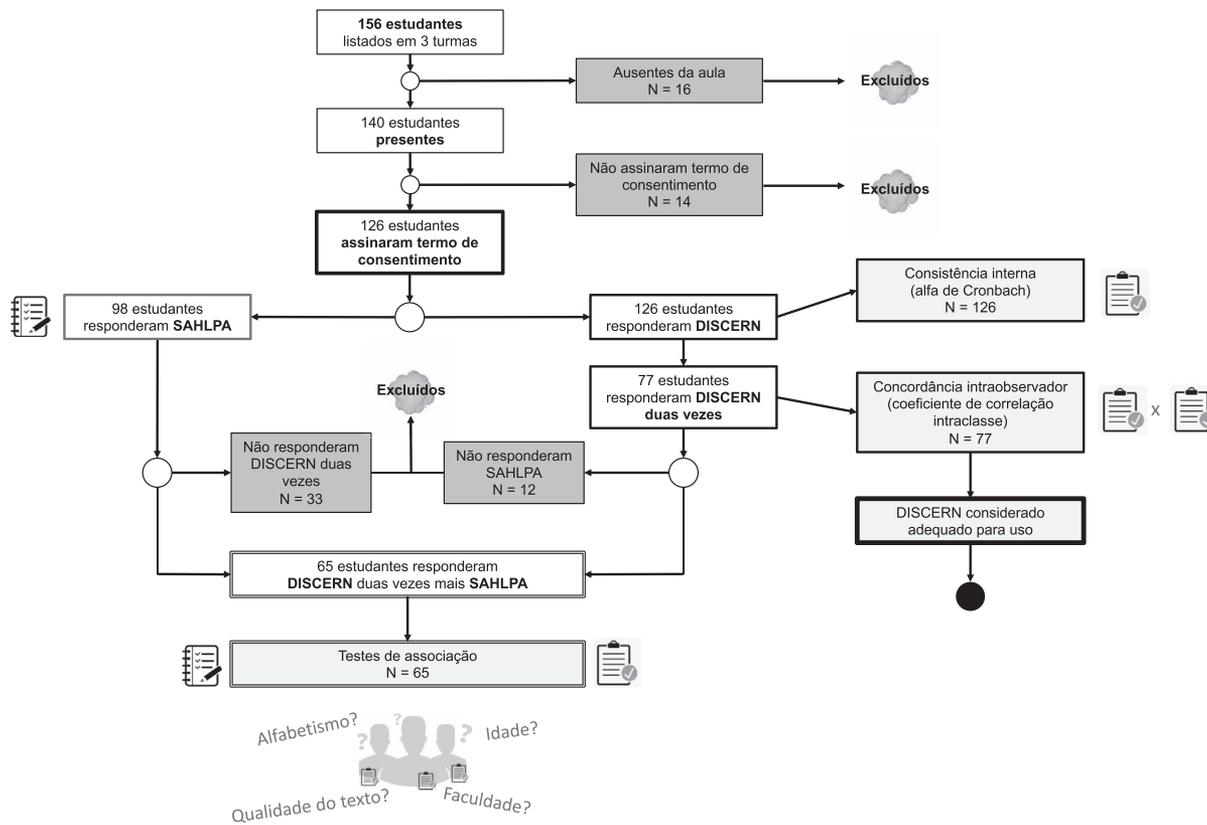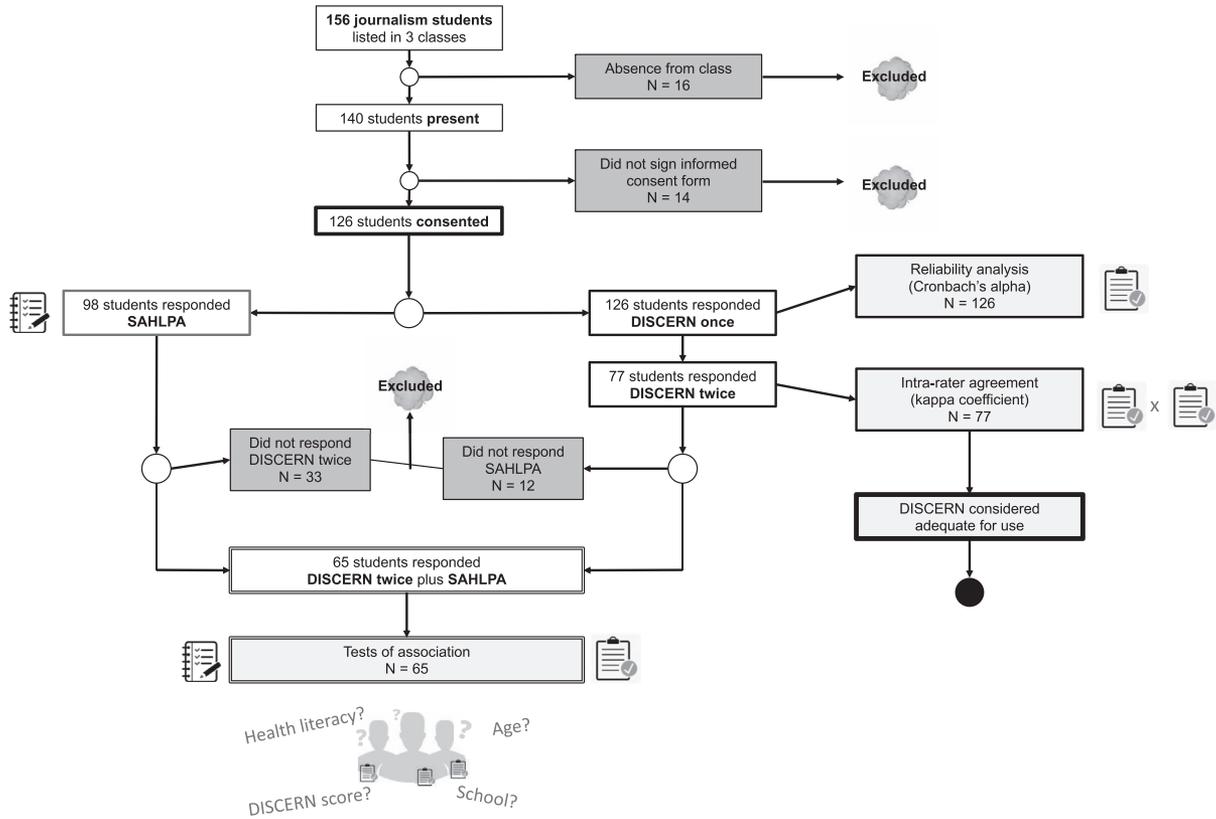
Fig. 1 – Flowchart of journalism students participation in the study.

Table 1 – Demographic characteristics of participants.		
Characteristic	n (%)	Total
Sex		
Male	42 (33)	127
Female	85 (67)	
Group (class)		
Cásper Líbero (night class)	34 (27%)	83
PUC (night class)	49 (38%)	
PUC (morning class)	44 (35%)	44
Age		
18-21 years	102 (82%)	125
>21 years	23 (18%)	

Table 2 – Internal consistency of the Brazilian Portuguese version of the DISCERN.		
Question	Correlation of the item with the total	Cronbach's alpha if the item is removed
Q1	0.319	0.864
Q2	0.403	0.861
Q3	0.473	0.858
Q4	0.670	0.847
Q5	0.457	0.859
Q6	0.365	0.862
Q7	0.599	0.852
Q8	0.135	0.874
Q9	0.723	0.844
Q10	0.575	0.853
Q11	0.513	0.856
Q12	0.570	0.853
Q13	0.611	0.851
Q14	0.222	0.867
Q15	0.522	0.855
Q16	0.711	0.847
Total		0.865

The removal of one item did not interfere significantly with the total score. Although the variation in correlation coefficients was greater than with the Cronbach's alpha, no item had a coefficient close to 1 (this would have shown that the item was able to respond completely for the final result of the questionnaire). Questions 9 ("Does [the text] describe how each treatment works?") and 16 (an overall evaluation of the publication) had higher correlations with the total score of DISCERN (r = 0.723 and r = 0.711, respectively).

During the second visit, all students present in the classes agreed to assess the same text again with the translated DISCERN tool. Losses were because of absent students.

The overall CCI was 0.845, which represents an "almost perfect" reproducibility of the Brazilian Portuguese DISCERN (Table 3). Each question had moderate to substantial reproducibility. Question 16 (overall quality) had the highest CCI and question 10 (benefits of each treatment) had the lowest. The error between the evaluations (the dispersion of the items around the mean) was highest (1.15 points) for question 5, which asked about the date when the text was produced. The total error of the DISCERN between the 2 evaluations was 4.68 points (from a total score of 80 points). A difference of 5 points between the first and second evaluation by the same evaluator represented 6.25% of the total score.

Relationship Between the Text Quality Evaluation and Health Literacy

The mean health literacy score of the 98 participants who answered the SAHL-PA questionnaire was 15.86 (± 1.62) points (which is considered "adequate"), but 17 journalism students (17%) had inadequate health literacy, and only 18 participants (18%) answered all the questions correctly (Appendix Table 4 in Supplemental Materials, found at http://doi.org/10.1016/j.vhri.2019.09.001). The main difficulty the students faced involved the word *icterícia* (jaundice): many could not even pronounce it, and 50 out of 98 (51%) did not answer that question correctly. The word *colite* (colitis) also seemed strange to many.

We investigated the relationship between the quality of the text, as assessed by participants using DISCERN, and the participants' level of health literacy, using SAHL-PA. Table 4 shows that there was no statistically significant correlation between SAHL-PA and each item or even the total DISCERN score (P > .05). In other words, there was no significant correlation between the text evaluation score and the health literacy of the respondent.

Text Quality Evaluation and Age, Sex, and Group

Participants' ages and sex were not associated with their DISCERN scores (Appendix Table 5 in Supplemental Materials, found at http://doi.org/10.1016/j.vhri.2019.09.001). The DISCERN scores of Cásper Líbero school students were significantly higher than the

scores of PUC students (P < .001). Scores from students attending night classes were also significantly higher than the scores of the students in morning courses (P < .001).

Discussion

The Brazilian Portuguese translation of the DISCERN tool is an instrument that can be used to adequately measure the quality of texts about health with good convergence among the items, good internal consistency, and nearly perfect reproducibility (with an ICC of 0.845).[24,32] The translated version has excellent internal reliability[22-40] and good reproducibility. Our study participants reported no difficulties in using the tool and no cultural issues that could impair the use of the translated questionnaire.[22] This translated version of the DISCERN is now freely available to any citizen, health professional, or institution in Brazil to evaluate the quality of publications on health written for laypeople.

We conducted the translation procedures of the instrument using bilingual collaborators of different backgrounds to ensure diversity. For testing the psychometric properties of the translated DISCERN, however, we used a homogeneous group of individuals with the same educational level. Their assessment of the quality of the text did not depend on their own knowledge or experiences with health (that is, their health literacy) nor did the age of the evaluator influence the DISCERN score. The variation in the DISCERN scores between the 2 visits was very small, which means that, in general, the translated instrument was able to evaluate the same thing in the same way twice.

This study had several strong points, starting with our adherence to the available guidelines for translation and validation of instruments[21,30,41,42] and our attention to semantics (conceptual equivalence)[43] and linguistic features. We adopted additional procedures proposed in published studies to avoid bias or to overcome difficulties. For instance, we used 3 instead of 2 initial translations.[21,30,41,42] This gave the evaluation committee more translation options and the possibility of merging several solutions found in 2 translations.

Based on our experience, we recommend always including a language professional in the evaluation committees for translation studies. In fact, grammatical mistakes, typos, and word

Question	First	Second	CCI	95% CI		Error
	Mean ± SD	Mean ± SD		Inferior limit	Superior limit	
Q1	4.03 ± 1.06	3.78 ± 1.14	0.655	0.484	0.777	0.63
Q2	3.40 ± 1.12	3.40 ± 1.13	0.721	0.577	0.822	0.60
Q3	3.76 ± 1.10	3.89 ± 1.08	0.371	0.138	0.566	0.87
Q4	2.21 ± 1.31	2.57 ± 1.34	0.522	0.317	0.680	0.90
Q5	2.70 ± 1.55	2.92 ± 1.42	0.397	0.169	0.585	1.15
Q6	3.35 ± 1.08	3.67 ± 1.19	0.416	0.194	0.598	0.86
Q7	1.57 ± 1.04	2.14 ± 1.27	0.525	0.254	0.705	0.75
Q8	3.48 ± 1.39	3.41 ± 1.21	0.474	0.256	0.645	0.95
Q9	2.00 ± 1.34	2.76 ± 1.45	0.529	0.222	0.719	0.88
Q10	2.98 ± 1.34	3.17 ± 1.21	0.358	0.124	0.554	1.02
Q11	3.10 ± 1.35	2.89 ± 1.37	0.457	0.240	0.632	1.00
Q12	1.76 ± 1.29	2.21 ± 1.37	0.547	0.338	0.703	0.87
Q13	2.16 ± 1.32	2.65 ± 1.31	0.504	0.282	0.672	0.90
Q14	4.33 ± 1.11	4.02 ± 1.18	0.461	0.246	0.633	0.83
Q15	2.22 ± 1.31	2.33 ± 1.32	0.480	0.265	0.650	0.95
Q16	2.83 ± 1.23	3.02 ± 1.23	0.769	0.644	0.854	0.58
Total score	45.9 ± 12.2	48.9 ± 13.4	0.845	0.717	0.912	4.68

CI indicates confidence interval; SD, standard deviation.

misuse were detected in all translated modules, even those produced by professionals. This certainly provided a more accurate final version of DISCERN than if no language professional had participated in the process. We did not find any recommendation on this in previous publications.[21,30,41,42]

The participation of several people from different backgrounds and experiences on the translation evaluation committee was essential to complement the otherwise linguistic analysis. Nevertheless, there are difficulties when joining specialists in consensus conferences, such as a lack of time, competing agendas, and even structural problems, such as a proper space for the meetings. In translation and instrument validation studies, the need for face-to-face meetings may result in the loss of many potential contributors. Our use of an electronic voting system allowed the committee members to give their input without the need for personal meetings. All participants answered quickly and reported no difficulty in responding to the online questionnaire.

The internal consistency of DISCERN in Portuguese was high (with a Cronbach's alpha of 0.865), and the analysis of the correlation of each question with the whole showed a uniform set, in which the removal of one item slightly interfered with the internal consistency of the instrument. The only two questions that, once taken from DISCERN, contributed to a slight increase in this coefficient were questions 8 and 14. Nevertheless, since the magnitude of the increase with the withdrawal of these questions from the questionnaire was of less than a hundredth of a point, and given the possible loss resulting from their elimination, we decided to keep them in the translated version of DISCERN.

Question 8 may actually be a bit challenging for some respondents because it asks, "Does it refer to areas of uncertainty?" This question presupposes that there are always health issues for which there is doubt and that the text should address them. This is probably true in most cases, but not all, and respondents may have difficulty in imagining such situations. It could also be argued that, in small, focused texts (and especially in journalistic texts), there may be no space to deal with "open questions" or "questions that science has not yet answered" because the press is usually only interested in what is already known or has been recently discovered, and less attention is given to what is uncertain. Nevertheless, given the small magnitude of the difference

(alpha of 0.865 with this question and 0.874 without this question), we decided to keep question 8 of the original English DISCERN in the Portuguese version.

Question 14 addresses a similar problem, asking, "Is it clear that there may be more than one treatment choice?" There is not always more than one option available, however; for example, the publication may be issuing something innovative. This question reveals a limitation of the original DISCERN, which has not been updated in almost 20 years. Moreover, the text under evaluation could also be focused on a health issue that is not a treatment but rather a preventive measure such as brushing one's teeth, vaccinating, or using condoms. Therefore "treatment option" does not, in fact, apply to all texts in the health area. Nevertheless, the increase in reliability with the withdrawal of this question was so minimal (from 0.865 to 0.867) that we decided it would not be worthwhile to stop investigating this problem with DISCERN in Portuguese, even if it were to provoke a lower response or a blank answer. Thus we opted to maintain these two issues in DISCERN in Portuguese without a major compromise of their internal consistency.

The only question that raised some concern during the pilot application was the one that dealt with shared decision-making (#15). Nevertheless, because the engagement of patients (or health consumers) in healthcare choices is considered by the World Health Organization to be key to reducing health inequalities and increasing safety,[44-46] we felt it was important to maintain this question in the final version to encourage people to search for this issue in texts about health interventions.

There are many studies that use DISCERN to evaluate the quality of texts in many health topics. Most of the participants in these studies, however, are not laypeople but rather health professionals. An instrument should not only be relevant and have strong psychometric properties but also be adapted to the characteristics of the population that will use it.[13,24,47] We decided to use laypeople to test the quality of a health text using the translated DISCERN tool, based on the premise that the translated instrument has to be adequate—comprehensible, culturally adapted—for its intended users.

Our study participants were all journalism students. In a few years, these individuals will be writing texts for the press, for

Table 4 – Spearman correlation between the total scores of the Short Assessment of Health Literacy for Portuguese-Speaking Adults (SAHL-PA) and DISCERN and between DISCERN questions with the total SAHL-PA scores, among participants who responded to both questionnaires (n = 90)

Question/ questionnaire	Mean ± SD	Correlation with SAHL-PA	P value
SAHL-PA total score	15.9 ± 1.62		
Q1 of DISCERN	4.04 ± 1.01	−0.184	.082
Q2 of DISCERN	3.33 ± 1.11	0.092	.388
Q3 of DISCERN	3.77 ± 1.09	0.151	.156
Q4 of DISCERN	2.32 ± 1.41	−0.038	.723
Q5 of DISCERN	2.80 ± 1.50	−0.020	.848
Q6 of DISCERN	3.33 ± 1.17	0.163	.124
Q7 of DISCERN	1.74 ± 1.12	−0.087	.415
Q8 of DISCERN	3.50 ± 1.37	−0.004	.969
Q9 of DISCERN	2.37 ± 1.50	−0.152	.154
Q10 of DISCERN	3.21 ± 1.35	0.005	.964
Q11 of DISCERN	3.22 ± 1.32	0.070	.514
Q12 of DISCERN	1.84 ± 1.31	0.026	.808
Q13 of DISCERN	2.34 ± 1.31	−0.076	.478
Q14 of DISCERN	4.39 ± 1.01	0.011	.919
Q15 of DISCERN	2.22 ± 1.28	0.012	.913
Q16 of DISCERN	2.90 ± 1.26	0.102	.340
DISCERN total score	47.3 ± 11.9	0.019	.862

SD indicates standard deviation.

corporations, for TV, and for radio. We hope that their participation in our study will prompt them to use the Brazilian Portuguese version of the DISCERN when critically assessing the work of their colleagues and as a guide to improve the quality of their own texts.

The translated version can now also be used both in research by those wishing to assess the quality of texts for patients or laypeople and in modifying texts. Future studies should include participants with different literacy levels and socioeconomic backgrounds. Studies could also use larger or smaller, more or less heterogeneous samples, and participants with higher or lower health literacy levels, who are more or less engaged in communication activities and more or less involved in healthcare. The research possibilities open up.

Conclusion

The DISCERN tool was successfully translated into Brazilian Portuguese. The translated version has excellent internal consistency and good reproducibility. The evaluator's age, sex, and health literacy did not interfere with the score resulting from the evaluation of the quality of the text.

Acknowledgements

Supplemental Material

Supplementary data associated with this article can be found in the online version at http://doi.org/10.1016/j.vhri.2019.09.001.

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