








TRANSLATION, CULTURAL ADAPTATION AND VALIDATION OF THE DIABETES SELF-REPORT TOOL

TRADUÇÃO, ADAPTAÇÃO CULTURAL E VALIDAÇÃO DO INSTRUMENTO DE AUTOAVALIAÇÃO EM DIABETES

TRADUCCIÓN, ADAPTACIÓN CULTURAL Y VALIDACIÓN DE LA HERRAMIENTA DE AUTOEVALUACIÓN DE LA DIABETES

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Funding: No funding.

Submitted on: 03/18/2022
Approved on: 01/19/2023

Responsible Editors:

-  Allana dos Reis Corrêa
-  Tânia Couto Machado Chianca

ABSTRACT

Objective: to carry out translation, cultural adaptation, and validation of the Diabetes Self-Report Instrument for application in the Brazilian context. **Methods:** methodological study carried out with 132 professionals, between 2016 and 2018, in six steps: 1 - Initial translation; 2 - Synthesis of the translation; 3 - Back translation; 4 - Evaluation by the judging committee; 5 - Cultural adequacy (pre-test); and 6 - Reliability. There was participation of professionals from multidisciplinary teams involved in the treatment of diabetes through the e-surv platform. **Results:** among the participants, there was a predominance of females (73.5%), professionals with specialization (Lato sensu postgraduate degree) (51.5%) and with experience in caring for people with diabetes (84.4%). The Content Validity Index (CVI) was satisfactory (0.850). The instrument showed good internal consistency (Cronbach's alpha=0.878). The instrument's reliability analysis, carried out by calculating the intraclass correlation coefficient (ICC), indicated adequate agreement in all measurements, 0.878 (95% CI: 0.864 - 0.891), with mean weighted Kappa of 0.714 and indices above 0.60 out of 85% of the items, showing good test-retest agreement. **Conclusion:** the translated and culturally adapted version of the Diabetes Self-report Instrument showed good reliability, acceptability, and satisfactory temporal stability according to international parameters, and can be used by healthcare professionals for self-report of diabetes.

Keywords: Diabetes Mellitus; Translating; Surveys and Questionnaires; Validation Study; Brazil.

RESUMO

Objetivo: realizar tradução, adaptação cultural e validação do Instrumento de Autoavaliação em Diabetes para aplicação no contexto brasileiro. **Métodos:** estudo metodológico realizado com 132 profissionais, entre os anos de 2016 e 2018, em seis etapas: 1 - Tradução inicial; 2 - Síntese da tradução; 3 - Retrotradução (back translation); 4 - Avaliação pelo comitê de juízes; 5 - Adequação cultural (pré-teste); e 6 - Reprodutibilidade. Houve participação de profissionais de equipes multiprofissionais envolvidas no tratamento do diabetes por meio da plataforma e-surv. **Resultados:** entre os participantes, predominaram o sexo feminino (73,5%), profissionais com especialização (pós-graduação Lato Sensu) (51,5%) e com experiência na assistência a pessoas com diabetes (84,4%). O Índice de Validade de Conteúdo (IVC) foi satisfatório (0,850). O instrumento apresentou boa consistência interna (Alfa de Cronbach=0,878). A análise de confiabilidade do instrumento, realizada pelo cálculo do coeficiente de correlação intraclass (CCI), indicou concordância adequada em todas as medidas, 0,878 (IC 95%: 0,864 - 0,891), com Kappa Ponderado médio de 0,714 e índices acima de 0,60 em 85% os itens, mostrando boa concordância teste e reteste. **Conclusão:** a versão traduzida e culturalmente adaptada do Instrumento de Autoavaliação em Diabetes apresentou boa confiabilidade, aceitabilidade e estabilidade temporal satisfatórias conforme os parâmetros internacionais, podendo ser utilizada, pelos profissionais da saúde, para autoavaliação em diabetes.

Palavras-chave: Diabetes Mellitus; Tradução; Inquéritos e Questionários; Estudos de validação; Brasil.

RESUMEN

Objetivo: realizar la traducción, adaptación cultural y validación de la Herramienta de Autoevaluación de Diabetes para aplicación en el contexto brasileño. **Métodos:** estudio metodológico realizado con 132 profesionales, entre 2016 y 2018, en seis etapas: 1 - Traducción inicial; 2 - Síntesis de la traducción; 3 - Traducción inversa; 4 - Evaluación por el comité de jueces; 5 - Adecuación cultural (pre-test); y 6 - Reproducibilidad. Se contó con la participación de profesionales de equipos multidisciplinares involucrados en el tratamiento de la diabetes a través de la plataforma e-surv. **Resultados:** entre

How to cite this article:

Neves SR, Moreira AD, Bandeira FF, Murta TGH, Pagano AS, Reis JS, Soares AN. Translation, cultural adaptation and validation of the Diabetes Self-Report Tool. REME - Rev Min Enferm. 2023[cited ____];27:e-1501. Available from: <https://doi.org/10.35699/2316-9389.2023.38826>

los participantes hubo predominio del sexo femenino (73,5%), profesionales con especialización (posgrado *Lato Sensu*) (51,5%) y con experiencia en el cuidado de personas con diabetes (84,4%). El Índice de Validez de Contenido (IVC) fue satisfactorio 0,850). La herramienta mostró buena consistencia interna (alfa de Cronbach=0,878). El análisis de fiabilidad de la herramienta, realizado mediante el cálculo del coeficiente de correlación intraclase (CCI), indicó una adecuada concordancia en todas las medidas, 0,878 (IC 95%: 0,864 - 0,891), con Kappa Ponderada media de 0,714 e índices superiores a 0,60 sobre 85 % de los elementos, mostrando buena concordancia test-retest. **Conclusión:** la versión traducida y culturalmente adaptada de la Herramienta de Autoevaluación de Diabetes mostró buena confiabilidad y aceptabilidad y estabilidad temporal satisfactoria según parámetros internacionales, y puede ser utilizada por profesionales de la salud para la autoevaluación de la diabetes. **Palabras clave:** Diabetes Mellitus; Traducción; Encuestas y Cuestionarios; Estudio de Validación; Brasil.

INTRODUCTION

Diabetes Mellitus (DM) is a chronic condition of great relevance to public health. In 2021, there were approximately 537 million individuals diagnosed with the disease worldwide, and estimates point to a 46% increase in the number of cases in 2045, resulting in approximately 783 million individuals affected.¹ The increase in the burden of disease in recent decades has been more evident in low- and middle-income countries.² In Brazil, in 2021, 9.1% of individuals reported a medical diagnosis of diabetes, with a proportion of 9.6% among women and 8.6 % among men.³

DM has a significant social impact, causing loss of quality of life and premature mortality due to chronic complications associated with hyperglycemia. Such complications can be macrovascular (coronary heart, cerebrovascular and peripheral vascular disease), microvascular (retinopathy and nephropathy) or neurological (neuropathy).⁴

The main objective of DM treatment is to achieve adequate glycemic control, and the role of healthcare professionals in the educational process of people with diabetes is essential.⁵ However, professionals from various areas demonstrate conceptual and clinical practice difficulties in relation to important aspects of disease, such as guidelines for self-care,⁶ evaluation of the feet,⁷ knowledge about periodontal complications,⁸ among others.⁹

The interest in health care has sensitized researchers to develop instruments to assess professionals' knowledge about diabetes.¹⁰ The development of an assessment instrument requires the mobilization of several professionals, knowledge in different areas, resources, and time. Before designing an assessment instrument, it is important for the researcher to make sure that there are validated instruments.¹¹

Some instruments have been proposed to assess knowledge about DM, such as the Diabetes Self-Report Tool (DSRT), whose objective is to carry out self-report of nurses about DM. The DSRT consists of 22 questions referring to etiology, treatment, hypoglycemia, loss of consciousness, tests, self-care, complications, and glycemic monitoring, considering type I and type II diabetes and the use of objective answers through likert scales.¹⁰

Studies that used the DSRT — from several countries, such as Saudi Arabia,⁹ United States¹² and Jordan¹³ — showed significant gaps in relation to some aspects of nurses' perception of knowledge about diabetes. Some gaps concern, for example, the sites for insulin administration and type 1 DM etiology, demonstrating the need for Permanent Education strategies. However, in Brazil, there are still few studies that assess the perception and knowledge about diabetes among healthcare professionals, as well as the lack of validated and culturally adapted instruments for this purpose.

The self-report of knowledge, skills, and competences of healthcare professionals regarding the particularities of diabetes is fundamental for them to improve their practices when necessary and, consequently, offer better conditions for an adequate treatment and follow-up of people with DM in different contexts. Therefore, the objective of the present study is to carry out the translation, cultural adaptation, and validation of the Diabetes Self-Report Tool (DSRT) in order to apply it in Brazil.

METHOD

Ethical aspects

The study was approved by the Research Ethics Committee of Grupo Santa Casa de Belo Horizonte (CAAE No. 65656117.6.1001.5138). The consent form was made available electronically on the first page of the questionnaire on the web platform used, in which the participants registered their agreement to participate in the study.

Design, period, and site of the study

This is a methodological study, carried out from October 2016 to October 2018.

Population or sample, inclusion and exclusion criteria

The international literature recommends the cultural adaptation of instruments validated in other languages¹¹ and establishes the following steps: i) initial translation; ii) translation synthesis; iii) back translation; iv) committee of judges; v) pre-test; vi) reability.¹⁴ To carry out this

study, permission was obtained from the first author of the DSRT instrument via e-mail.

In the first step, the initial translation, the synthesis of the translation, the back translation and the analysis by the judging committee were carried out. Five translators, an interdisciplinary committee (1 endocrinologist, 1 nutritionist, 1 linguist and 1 statistician) and a committee of judges composed of professionals from different areas (family health medicine, endocrinology, Nursing and applied linguistics) participated. Evaluators who had knowledge of the English language and those who worked with patients with DM were included in the study. They were characterized in terms of sociodemographic data, academic background, experience in caring for users with DM, training area and previous participation in other instrument validation committees.

Protocols of the study

The DSRT was designed to assess the Nursing team's perception of knowledge about diabetes, involving areas of knowledge such as the etiology of the disease, non-drug treatment, hypoglycemia, tests and insulin therapy.¹⁰ It should be noted that, originally, the DSRT instrument was developed exclusively for nurses;¹⁰ however, in this study, the instrument was translated and adapted for healthcare professionals in general after the researchers verified, in their performance as educators, the need for an instrument in Brazil that broadly assesses the knowledge of each healthcare professional about the condition of Diabetes Mellitus.

In the initial step, the DSRT was translated from English to Brazilian Portuguese by two independent bilingual translators, resulting in two versions: Translation 1 and Translation 2 (T1 and T2). Versions T1 and T2 were synthesized (T1-2) by a third translator together with the researchers. Version T1-2 was back-translated by two translators, resulting in two versions in English: Back translation 1 and Back translation 2 (BT1 and BT2). The five versions (T1 and T2; T1-2; BT1 and BT2) were analyzed for the preparation of a single version to be submitted to the judging committee. The first adapted version of the DSRT was sent to the interdisciplinary committee for analysis and then presented to the judging committee for evaluation.

Of the 54 professionals selected to participate in the judging committee, there were 44 from the health area and 10 linguists. Of these, only 27 responded to the assessment (8 women and 19 men). The professionals invited to compose the judging committee received an e-mail with the invitation letter and the link that directed them

to the e-Surv platform (Esurv, c2001 - 2016). On each page of this tool, there was an item from the original version of the DSRT and then the translated version to be analyzed. The response options for each item were: 1 – “requires complete retranslation”; 2 – “requires partial retranslation”; and 3 – “does not require retranslation”. When checking the options “requires complete retranslation” or “requires partial retranslation”, judges should justify, in a specific space, the reason why the translation of the item should be modified. The committee analyzed the idiomatic, conceptual, semantic, cultural, and conceptual equivalence, as recommended by the literature.¹⁴

Cultural adequacy was carried out through a pre-test (face-to-face interview) with 42 professionals (37 women and 5 men), of which 36 were from the health area (6 nurses, 6 physiotherapists, 6 doctors, 6 nutritionists, 6 psychologists and 6 physical education teachers), in addition to a committee of specialists composed of 6 professors (1 endocrinologist, 4 nurses and 1 statistician). The sample of the target population was of the non-probabilistic and convenience type. At this stage, first, the interviewee answered the sociodemographic questions and performed the assessment of each instrument item regarding clarity.

In the third step, reability (test/retest), 114 professionals were invited, of which only 63 participated (52 women and 11 men). To assess reliability, a sample of at least 50 subjects is recommended.¹⁵ The adapted version of the DSRT was called the Diabetes Self-Report Instrument and was inserted into the e-Surv online platform. The professionals were invited to respond to the questionnaire at two different times, with an interval of 7 to 14 days between them. E-mails and cell phone messages were sent to remind the respondent, as well as a new link for him to respond to the test in the second moment (Figure 1).

Analysis of results and statistics

A descriptive analysis of the data was carried out, with frequencies and percentages, to characterize the sample with sociodemographic variables and the professionals' previous experiences. Based on the judges' answers, the Content Validity Index (CVI) was calculated, based on the frequencies of answer 3 (*does not require translation*) divided by the total number of instrument raters. The higher the CVI, the lower the need to apply new tests to evaluate the instrument. The CVI is classified as “low reliability” (values below 0.60), “good reliability” (values between 0.70 and 0.80) or “excellent reliability” (greater than 0.90).

To assess the reliability of the construct, Cronbach's alpha (α) was calculated, which assesses the internal consistency of the instrument.¹⁷ The temporal stability (reability) of the instrument was assessed using the test-retest, calculating the Intraclass Correlation Coefficient (CCI)

and the weighted Kappa index (KW). The significance level adopted was 5%. Data were analyzed using the Statistical Package for the Social Sciences® (SPSS) version 22.0 software.

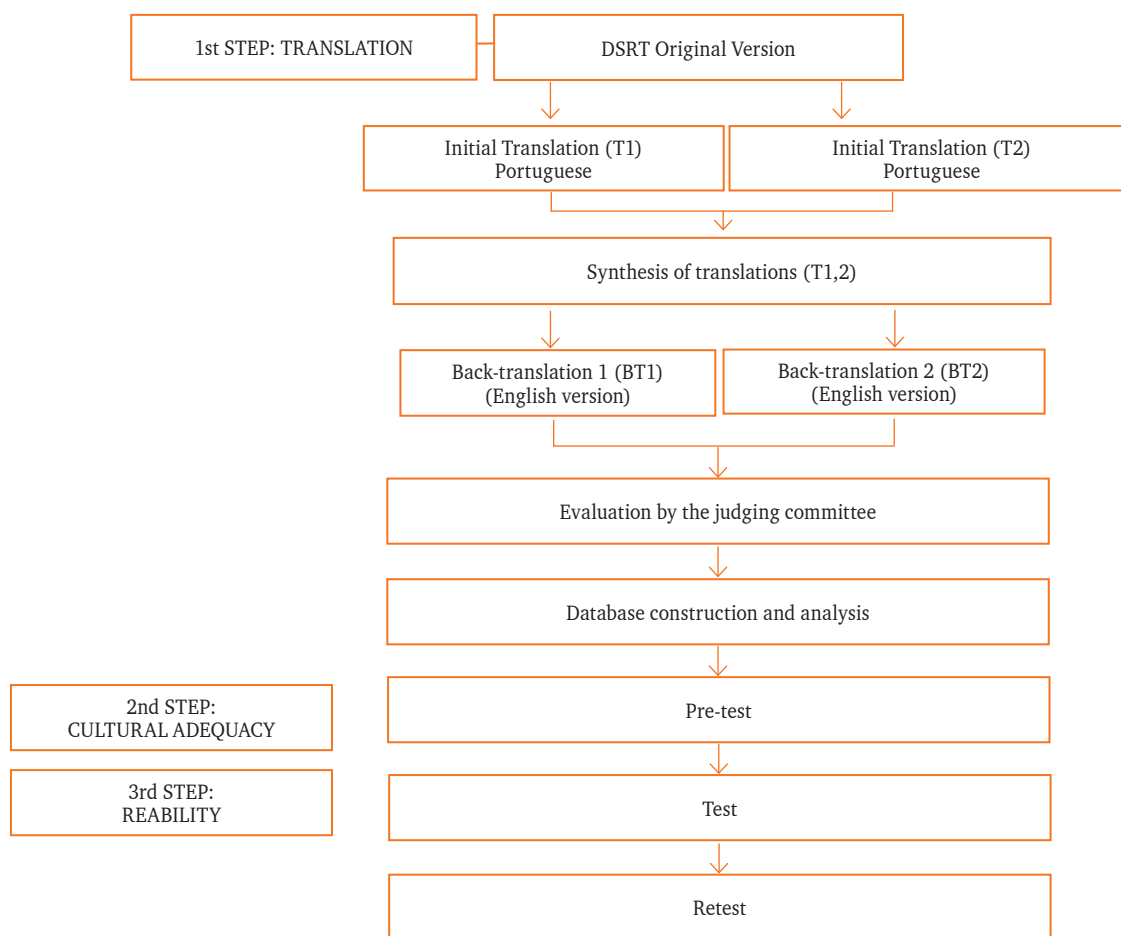


Figure 1 - Translation, cross-cultural adaptation, and reliability of the Diabetes Self-Report Instrument. Belo Horizonte, Minas Gerais, Brazil, 2016-2018

Note: DSRT: Diabetes Self Report Tool; T1: Translation 1; T2: Translation 2; BT1: Back translation 1; BT2: Back translation 2.

RESULTS

One hundred thirty-two professionals participated in this research, 20.5% in the translation and cultural adaptation stage, 31.8% in cultural adaptation and 47.7% in reability. There was a predominance of female participants (73.5%), professionals with specialization (*Lato sensu* postgraduate degree) (51.5%) and with experience in caring for people with Diabetes (84.4%) (Table 1).

The judges' observations for each item of the instrument were evaluated according to the CVI, according to the most evident suggestions, such as: changes in signal markings, content and/or interpretation, semantics, suggestion of a new translation and expansion of the

details of the questions. The Diabetes Self-Report Instrument had a mean CVI of 0.850 (SD 0.11).

In the original version, the instruction "Once you have completed this questionnaire, seal it in the envelope marked "Document #1" "and then open the envelope marked "Document #2" and complete that questionnaire", was prepared for the instrument to be applied in person and in print. In the first interdisciplinary meeting, this instruction was withdrawn, since the questionnaire would be applied in electronic format and via the internet.

During the discussion of the judges' suggestions, decisions were made on some adaptations and adjustments that deserve to be highlighted, such as the instruction of

Table 1 - Characteristics of participants in the stages of translation, cultural adaptation, and reability of the Diabetes Self-Report Instrument. *Belo Horizonte, MG - Brazil, 2016-2018*

| Sociodemographic characteristics | Translation and cultural adaptationn (%) n=27 | Cultural adequacyn (%) n=42 | Reability n (%) n=63 | Total n (%) n=132 |
|---|--|--------------------------------|-------------------------|----------------------|
| Gender | | | | |
| Male | 19(14.4) | 05(3.8) | 11(8.3) | 35(26.5) |
| Female | 08(6.1) | 37(28.0) | 52(39.4) | 97(73.5) |
| Education | | | | |
| Graduation | 01(0.8) | 06(4.5) | 19(14,4) | 26(19,7) |
| Specialization | 01(0.8) | 30(22.7) | 37(28,0) | 68(51,5) |
| Master's degree in progress | 12(9.0) | 08(6.0) | ----- | 20(15,1) |
| Master's degree | 07(5.3) | 06(4.5) | 02(1,5) | 15(11,3) |
| PhD in progress | 03(2.3) | ----- | ----- | 03(2,3) |
| PhD in progress | 03(2.3) | 01(0.8) | 01(0,8) | 05(3,9) |
| Occupation | | | | |
| Nurse | 11(8.3) | 07(5.3) | 14(10.6) | 32(24.2) |
| Physiotherapist | ----- | 07(5.3) | 10(7.6) | 17(12.9) |
| Linguistic | 08(6.1) | ----- | ----- | 08(6.1) |
| Physician | 08(6.1) | 07(5.3) | 12(9.1) | 27(20.5) |
| Nutritionist | ----- | 07(5.3) | 09(6.8) | 16(12.1) |
| Physical education teacher | ----- | 07(5.3) | 09(6.8) | 16(12.1) |
| Psychologist | ----- | 07(5.3) | 09(6.8) | 16(12.1) |
| Assistance experience for people with Diabetes | | | | |
| Yes | 19(14.4) | 42(31.8) | 51(38.6) | 112(84.8) |
| No | 08(6.1) | ----- | 12(9.1) | 20(15.2) |

the questionnaire “circle the answer to each statement”. Since the application of the questionnaire would be in electronic format, it was decided to remove the section “with a circle” and formulate the instruction as “choose your answer for each alternative”.

In terms of semantic equivalence, the structure “I can” can be translated into Portuguese as “posso” or “sei”. In view of the ambiguity of “I can”, which can mean “I have permission” or “am allowed”, the translation “have the ability” was chosen, without the need to make explicit the personal pronoun “I”, since, in the grammar of uses in the Brazilian language, the subject of the sentence does not need to be made explicit by a pronoun. Therefore, the expression “I can” was translated as “know”.

With regard to idiomatic equivalence, the word “diabetic” was translated as “patient with Diabetes”, in view of recent guidelines on omitting the adjective “diabetic”. The expression “give care” (item 6) was replaced by “care”.

In the analysis of conceptual equivalence, it was necessary to adjust the translation of the expression “sick day” (item 8). This term refers to the day when the person with Diabetes has different health problems — not necessarily due to Diabetes — that generally prevent him/

her from carrying out his work or study activities. In the analysis of conceptual equivalence, it was necessary to adjust the translation of the expression “sick day” (item 8). This expression was translated as “in case of malaise or disease”, since there is no conventional idiomatic expression in Portuguese; thus, the proposed wording meets the meaning of “moments in which the person may have a mild malaise or any other acute illness that may interfere with their self-care management of Diabetes”. Regarding experiential equivalence, the word “insulin” (item 10) was placed in the plural since there are several types of insulin for treatment. In semantic terms, an adjustment was made in the translation of the expression “I can describe the diet recommended for Type I Diabetes” and “I can describe the diet recommended for Type II Diabetes”: “I can describe” was translated by the expression “know to advise”.

In the pre-tests, respondents reported difficulty in marking their answers on the 4-point Likert scale. The original instrument presents the four options: 1 - I totally disagree; 2 - disagree; 3 - agree; and 4 - I totally agree.⁶ Therefore, the expert committee opted for a 3-point Likert scale, as follows: 1 - yes; 2 - more or less; 3 - no.

According to the suggestions of the participants in this step, “*patient with Diabetes*” was paraphrased in the pre-test as “*person with Diabetes*”. The term “*loss of consciousness*” (item 7) was paraphrased as “*change in consciousness*”. Item 8 (“*I know how to interpret the results of the urinalysis of people with Diabetes*”) was excluded. According to the legislation of some professional categories, the interpretation of laboratory tests is not contemplated; therefore, the expert committee decided to exclude this item.

The word “*procedure*” (item 10) was reformulated as “*preparation and administration*”; “*oral hypoglycemic agents*” (item 11) as “*oral drugs*”. The word “*evaluate*” (item 12) was replaced by “*identify*”, and the expression “*long-term complications*” (item 14) was paraphrased as “*chronic complications*”. The words “*follow-up*” and “*glucose*” (item 17) were replaced by “*monitoring*” and “*glycemia*”, as suggested by the professionals interviewed in the pre-test. The changes made to the instrument are

summarized in Figure 2, and the final version of the *Diabetes Self-Report Tool* is available in Attachment 1.

The Diabetes Self-Report Instrument showed good internal consistency, with a Cronbach's alpha of 0.878. To analyze the influence of each item, the Absence alpha was calculated, removing one item at a time. The alpha values presented in these items were close to the total alpha. In all items, the value remained above 0.7, being considered satisfactory; therefore, no items were removed from the instrument (Table 2).¹¹

The analysis of the temporal stability of the instrument was supported by the calculation of the ICC according to the total score of the items at the test and retest times. The ICC was 0.878 (95% CI: 0.864 – 0.891). The KW, which evaluates the degree of agreement, varied between 0.505 and 0.839, with a mean of 0.714 and rates above 0.60 in 85% of the items, also showing good test and retest agreement.¹¹

Figure 2 - Summary of suggestions from the judging committee and professionals who participated in the pre-test of the Diabetes Self-Report Instrument. Belo Horizonte, MG - Brazil, 2016-2018

| Before | After |
|--|--|
| Sentence “ <i>please circle the answer to each statement</i> ” | Replaced with “ <i>please mark your answer for each alternative</i> ” |
| Sentence “ <i>I can</i> ” | Translated into “ <i>I know</i> ” |
| Word “ <i>diabetic</i> ” | Translated into “ <i>patient with Diabetes</i> ” |
| Expression “ <i>dar atendimento</i> ” | Replaced with “ <i>care</i> ” |
| Expression “ <i>sick day</i> ” | Translated with “ <i>in case of malaise or disease</i> ” |
| Word “ <i>insulin</i> ” | Placed in the plural “ <i>insulins</i> ” |
| Expression “ <i>I can describe</i> ” | Translated into “ <i>know how to advice</i> ” |
| Likert scale with four options: 4 - <i>I totally agree</i> ; 3 - <i>agree</i> ; 2 - <i>disagree</i> ; 1 - <i>strongly disagree</i> | Changed to Likert scale with 3 options: 1 - <i>yes</i> ; 2 - <i>somewhat</i> ; 3 - <i>no</i> |
| Expression “ <i>patient with Diabetes</i> ” | Translated into “ <i>person with Diabetes</i> ” |
| Expression “ <i>loss of consciousness</i> ” | Changed to “ <i>change in consciousness</i> ” |
| Question “ <i>I know how to interpret urine test results for people with Diabetes</i> ” | Removed from the instrument |
| Word “ <i>procedure</i> ” | Replaced with “ <i>preparation and administration</i> ” |
| Expression “ <i>oral hypoglycemic agents</i> ” | Replaced with “ <i>oral drugs</i> ” |
| Word “ <i>evaluate</i> ” | Replaced with “ <i>identify</i> ” |
| Expression “ <i>long-term complications</i> ” | Replaced with “ <i>chronic complications</i> ” |
| Expression “ <i>follow-up</i> ” e “ <i>glucose</i> ” | Replaced with “ <i>monitoring</i> ” e “ <i>glycemia</i> ” |

Table 2 - Weighted Kappa Coefficient and Absence Alpha for each item of the Diabetes Self-Report Instrument. *Belo Horizonte, MG - Brazil, 2016-2018*

| Questions | KW | Cronbach's alpha if the item is withdrawn |
|--|-------|---|
| 1. I can describe the etiology of type 1 Diabetes | 0.836 | 0.926 |
| 2. I can describe the etiology of type 2 Diabetes | 0.703 | 0.926 |
| 3. I can describe the basics of treatment for people with Type 1 Diabetes <i>Mellitus</i> | 0.640 | 0.848 |
| 4. I can describe the basics of treatment for people with Type 2 Diabetes <i>Mellitus</i> | 0.616 | 0.851 |
| 5. I know how to identify the necessary care for people with Diabetes undergoing surgeries | 0.505 | 0.764 |
| 6. I know how to administer the necessary care for people with Diabetes in case of mild hypoglycaemia | 0.791 | 0.904 |
| 7. I know the precautions for people with Diabetes in case of a change in consciousness | 0.669 | 0.851 |
| 8. I know how to guide people with Diabetes for their self-care in case of intercurrents | 0.780 | 0.925 |
| 9. I can describe the action and effect of insulins | 0.674 | 0.862 |
| 10. I can list the steps for preparing and administering insulin | 0.695 | 0.882 |
| 11. I can describe the action and effects of oral Diabetes medicines | 0.598 | 0.802 |
| 12. I know how to identify the warning signs in people who are in diabetic ketoacidosis | 0.743 | 0.894 |
| 13. I know how to explain the effect of stress on Diabetes control | 0.517 | 0.769 |
| 14. I know how to identify the chronic complications associated with Diabetes | 0.713 | 0.889 |
| 15. I know how to explain the effect of physical exercise on Diabetes control | 0.757 | 0.900 |
| 16. I know how to advise on the recommended diet for people with Diabetes | 0.754 | 0.887 |
| 17. I know how to give directions for performing one of the blood glucose monitoring methods | 0.652 | 0.831 |
| 18. I know how to guide people with Diabetes about their daily self-care | 0.739 | 0.890 |
| 19. I can identify three sites for the application of insulin | 0.741 | 0.902 |
| 20. I know how to identify the necessary care for people with Diabetes with hyperglycemia without ketose | 0.839 | 0.945 |

Note: KW: weighted *kappa*.

DISCUSSION

The DSRT instrument was originally designed in English and initially developed to be applied to nurses.¹⁰ However, in this study, it was translated and adapted to be used by different healthcare professionals, after verifying the need to an instrument in Brazil that broadly evaluated the professional's knowledge about the condition of DM.

The steps of translation, cultural adaptation and reliability followed the recommended by the literature.¹⁵ The participation of professionals in the field of Applied Linguistics, Statistics and Health contributed to the improvement of the instrument. Several adjustments were made at the semantic, conceptual, idiomatic, and experiential levels, aiming to provide reliability to the instrument.¹⁷

The adaptation of the DSRT instrument to be applied electronically in Brazil provides the instrument with a greater reach of participants, and can be disseminated through social media and e-mails, with automatic capture of responses. Surveys carried out online have numerous other advantages, such as speed, ease and reduced operational costs. In addition, the absence of contact with the interviewer can reduce the probability of social desirability bias, that is, it avoids answers that are often inconsistent with reality and that are provided by the interviewee because he considers them appropriate for the observer's point of view.¹⁸

Some adaptations were considered essential for the instrument to be used by professionals from various areas of health in Brazil. To maintain the equivalence of items, 2

questions were transformed into 1, as they dealt with the diet of people with DM1 and DM2. The dietary pattern for DM1 and DM2 is analogous, except in cases that present some clinical specificity that requires differentiated care.

The item “I know how to interpret the results of the urine test of people with Diabetes” was excluded, given the possibility of understanding the term “interpret” as a synonym for “evaluate”. The Code of Ethics of some professions was consulted, and in some categories, the interpretation of laboratory tests is not included. In this sense, the expert committee decided to withdraw this item.

In view of these changes, the Diabetes Self-Report Instrument, in its Brazilian version, now comprises 20 items. In addition, there was a modification of the Likert scale for three response options. Some authors suggest shorter answers, and there are studies that point out that it is more feasible to adapt the Likert scale to three response options.¹⁹

In the cultural adaptation, there was the participation of the committee of specialists and professionals active in the labor market. It was necessary to carry out three pre-tests, as the aim was to minimize the difficulties encountered in understanding the items, taking into account the cultural context of the target population. Cultural adequacy provides an interaction between the researcher and the target population through the face-to-face interview.²⁰

The results of the validity and reliability tests demonstrated in this study are compatible with those from research that reported the validation and cross-cultural adaptation of other instruments nationally^{21,22} and internationally,^{23,24} following methodological rigor consolidated in the literature.^{15,16} Related to this, we emphasize the importance of this study to provide a reliable measure of self-report of knowledge about Diabetes in Brazil, considering the low number of studies that have adequately validated questionnaires for this purpose.²⁴ Through self-report of knowledge about the etiology, the management and complications of DM, healthcare professionals can measure their capacities as educators, seeking to improve them to promote comprehensive care and empowerment for the self-care of people with Diabetes.

Study limitations

The differential and (at the same time) limitation of this study stems from the lack of previous instruments that assess the self-reported knowledge of healthcare professionals about Diabetes in Brazil. This makes a comparative analysis with results from other studies difficult.

Contributions to the area of Nursing, health or public policy

The heterogeneity of the sample is seen as a strong point of this research, since there are few studies with diverse samples of subjects in the process of translation and cultural adaptation. Thus, the validated instrument can be used for the self-report of Nursing professionals and other healthcare professionals in relation to DM, contributing to the knowledge search process and consequent improvement in the monitoring of users in the services.

CONCLUSION

The Diabetes Self-Report Instrument showed good reliability, acceptability, and satisfactory temporal stability, according to international parameters, and can be used for self-report of diabetes by healthcare professionals.

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Attachment

DIABETES SELF-REPORT QUESTIONNAIRE

FINAL VERSION

| Diabetes Self-Report Instrument | |
|---|-------|
| Instructions | |
| 1. Make sure to answer all the questions. | |
| 2. Be as honest as possible when self-report your knowledge and skills related to caring for people with diabetes. Mark your answer for each statement. | |
| 1 - I know how describe the etiology of type 1 diabetes. | 1 2 3 |
| 2 - I know how to describe the etiology of type 2 Diabetes. | 1 2 3 |
| 3 - I know how to describe the basics of treatment for people with Type 1 Diabetes <i>Mellitus</i> . | 1 2 3 |
| 4 - I know how to describe the basics of treatment for people with Type 2 Diabetes <i>Mellitus</i> . | 1 2 3 |
| 5 - I know how to identify the necessary care for people with Diabetes undergoing surgeries. | 1 2 3 |
| 6 - Sei administrar os cuidados necessários a pessoas com Diabetes em caso de hipoglicemia leve. | 1 2 3 |
| 7 - I know the precautions for people with Diabetes in case of a change in consciousness. | 1 2 3 |
| 8 - I know how to guide people with Diabetes for their self-care in case of intercurrents. | 1 2 3 |
| 9 - I can describe the action and effect of insulins. | 1 2 3 |
| 10 - I know how to list the steps for preparing and administering insulin. | 1 2 3 |
| 11 - I know how to describe the action and effects of oral diabetes drugs. | 1 2 3 |
| 12 - I know how to identify the warning signs in people who are in diabetic ketoacidosis. | 1 2 3 |
| 13 - I know how to explain the effect of stress on Diabetes control. | 1 2 3 |
| 14 - I know how to identify the chronic complications associated with Diabetes. | 1 2 3 |
| 15 - I know how to explain the effect of physical exercise on Diabetes control. | 1 2 3 |
| 16 - I know how to advise on the recommended diet for person with Diabetes. | 1 2 3 |
| 17 - I know how to give directions for performing one of the blood glucose monitoring methods. | 1 2 3 |
| 18 - I know how to advice persons with Diabetes about their daily self-care. | 1 2 3 |
| 19 - I know how to identify three sites for the application of insulin. | 1 2 3 |
| 20 - I know how to identify the necessary care for persons with Diabetes with hyperglycemia without ketosis. | 1 2 3 |

Legend: 1 - Yes; 2 - More or Less; 3 - No.