Brazilian version of the Diabetic Foot Self-Care Questionnaire of the University of Malaga, Spain: cross-cultural adaptation

Versão brasileira do Diabetic Foot Self-Care Questionnaire of the University of Malaga, Spain: adaptação transcultural
Versión brasileña del Cuestionario de Autocuidado del Pie Diabético de la Universidad de Málaga, España: adaptación transcultural

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Abstract

Objective: To carry out the cross-cultural adaptation of the Diabetic foot self-care questionnaire of the University of Malaga, Spain for Brazil. **Method**: Methodological study carried out in six stages: initial translation; synthesis of the translations; backtranslation or back-translation; review by a committee of experts; pre-testing and submission of the documents to the authors of the instrument, in August/2020 to January/2021. The Content Validity Index was calculated to assess the objectivity of the content validity. Kappa and Exact Binomial Distribution Test, indicated for small samples, were used to assess the reliability of agreement between the experts. **Results**: The ten experts selected, obtained an average score of 8.1 ± 3.0 confirming their high degree of expertise and competence. In terms of semantic, idiomatic, cultural, and conceptual equivalence, the items had a CVI ≥0.90. The pre-test was carried out with 32 people with diabetes and only one found it very difficult, demonstrating that the target audience was able to understand the instrument. **Conclusion**: The Diabetic foot self-care questionnaire of the University of Malaga - Brazilian version is a valid tool for assessing foot self-care behavior in people with diabetes, as well as being understandable, easy, and quick for patients to complete.

Descriptors: Diabetic Foot; Diabetes Mellitus; Self-care; Validation Study; Nursing.

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Whats is already known on this?
The need to measure self-care for the feet of people with diabetes and its relevance to filling the gap in the literature regarding specific instruments for this construct in Brazil.

What this study adds?
It provides an instrument for measuring self-care of the feet adapted to the Brazilian population, to guide health professionals in drawing up a care plan geared to individual needs.

Resumo

Objetivo: *realizar a adaptação transcultural do instrumento Diabetic Foot Self-Care Questionnaire of the University of Malaga, Spain para o Brasil*. **Métodos:** *estudo metodológico realizado em seis etapas: tradução inicial; síntese das traduções; backtranslation ou retrotradução; revisão por um comitê de especialistas; pré-teste e submissão dos documentos aos autores do instrumento, em agosto/2020 a janeiro/2021. Calculou-se o Índice de Validade de Conteúdo visando a objetividade da validade de conteúdo. Para a avaliação da confiabilidade da concordância entre os especialistas, utilizou-se o Kappa e Teste Exato de Distribuição Binomial, indicado para pequenas amostras.* **Resultados:** *os dez especialistas selecionados, obtiveram média de pontuação de 8,1 ± 3,0 confirmando o elevado grau de perícia e competência. Na equivalência semântica, idiomática, cultural e conceitual, os itens apresentaram IVC ≥0,90. O pré-teste foi realizado com 32 pessoas com diabetes e apenas um considerou muito difícil, demonstrando que o público-alvo conseguiu compreender o instrumento.* **Conclusão:** *o Diabetic Foot Self-Care Questionnaire of the University of Malaga ¬versão brasileira é uma ferramenta válida para avaliar o comportamento de autocuidado do pé em pessoas com diabetes, além de ser compreensível, de fácil e rápido preenchimento para o paciente.*

Descritores: *Pé Diabético; Diabetes Mellitus; Autocuidado; Estudo de Validação; Enfermagem.*

Resumén

Objetivo: *realizar la adaptación transcultural del Cuestionario de Autocuidado del Pie Diabético de la Universidad de Málaga, España, a Brasil.* **Método:** *estudio metodológico realizado en seis etapas: traducción inicial; síntesis de traducciones; traducción inversa; revisión por un comité de expertos; preprueba y presentación de los documentos a los autores del instrumento de agosto/2020 a enero/2021. El Índice de Validez de Contenido fue calculado buscando la objetividad de la validez de contenido. Para evaluar la confiabilidad del acuerdo entre expertos se utilizó Kappa y la Prueba de Distribución Binomial Exacta, indicada para muestras pequeñas.* **Resultados:** *los diez expertos seleccionados obtuvieron una puntuación media de 8,1 ± 3,0, confirmando el alto grado de experiencia y competencia. En equivalencia semántica, idiomática, cultural y conceptual, los ítems presentaron CVI ≥0,90. El pretest se realizó con 32 personas con diabetes y solo una lo consideró muy difícil, demostrando que el público objetivo pudo comprender el instrumento.* **Conclusión:** *la versión brasileña del Cuestionario de Autocuidado del Pie Diabético de la Universidad de Málaga es una herramienta válida para evaluar la conducta de autocuidado del pie en personas con diabetes, además de ser comprensible, fácil y rápido de completar para el paciente.*

Descriptores: *Pie Diabético; Diabetes Mellitus; Autocuidado; Estudio de Validación; Enfermería.*

INTRODUCTION

Complications related to the feet of people with diabetes are a preventable, complex condition permeated with suffering and financial costs for the patient, family members, professionals, health systems, and society.[1] Diabetic Foot Ulcer (DFU), a common problem in long-standing diabetes, is among the most serious complications of Diabetes Mellitus (DM) that carries an unfavorable prognosis, increases the risk of death, and should therefore be prevented.[1,2]

Although the prevalence and spectrum of diabetic foot disease varies in different regions of the world, the pathways to ulceration are similar in the majority of patients.[1]

The five-year mortality risk is 2.5 times higher in people with DFU compared to people with diabetes without foot complications.[3]

Of all amputations in people with diabetes, 85% are preceded by a foot ulcer.[3] And of those who have had an amputation, the five-year mortality rate is 40%, rising to 63%.[2] Therefore, every effort should be made to prevent DFUs, as they are a precursor to amputation and mortality.[4] These injuries can be prevented with regular assessment, aimed at screening the feet of people with diabetes, risk classification, early treatment, and self-care practices, to guarantee systematic and preventive care actions.[5–7]

In this sense, the assessment of self-care through the use of valid instruments, regardless of the history of complications, helps to ensure early interventions and directs preventive actions in the follow-up of patients with diabetes.[8]

To help assess self-care, Spanish researchers developed the Diabetic Foot Self-Care Questionnaire Of The University Of Malaga, Spain (DFSQ-UMA)[8] which has already been translated into French,[9] Italian,[10] Persian,[11] and Arabic,[12].

The DFSQ-UMA makes it possible to assess self-care for the feet of people with diabetes, aimed at identifying self-care deficits reported by the patients themselves (Patient Reported Outcomes - PRO)[8]. Given the importance of measuring self-care for the feet of people with diabetes, considering its essential role in preventing diseases and promoting health, there is a gap in the literature regarding specific instruments for this construct in Brazil[13]. The question is therefore: can the Brazilian version of the Diabetic Foot Self-Care Questionnaire of the University of Malaga, Spain (DFSQ-UMA-Br) be considered valid and equivalent to the original version?

We hope to provide the Brazilian population with a valid instrument for assessing self-care of the feet of people with DM, as it will enable us to draw up a care plan geared to individual and sociodemographic needs, correct existing deficiencies, motivate and guide people to self-care in order to promote health and prevent complications. This study aimed to carry out the cross-cultural adaptation of the Diabetic Foot Self-Care Questionnaire of the University of Malaga, Spain to Brazil.

METHODS

This is a methodological study for cross-cultural adaptation of the DFSQ-UMA questionnaire carried out in six stages: 1) Initial translation; 2) Synthesis of the translations; 3) Back-translation; 4) Review by a Committee of Experts; 5) Pre-test and 6) Submission of the documents for appraisal by the authors of the instrument[14]. It is worth mentioning that before starting the study, authorization was obtained from the author of the original instrument to carry out the validation process in Brazil.

The original instrument consists of 16 questions, with five answer options each, which represent the adequacy of the self-care behavior (1-Very inadequate; 2-Inadequate; 3-Regular; 4-Adequate; and 5-Very adequate), or the frequency of a certain self-care activity (1-Never; 2-Rarely; 3-Sometimes; 4-Frequently; 5-Always). It is divided into three domains: Self-care, Self-management, and Self-examination, and Footwear/shoes and socks. The survey was carried out between August 2020 and January 2021.

In stage 1, the initial translation from Spanish into Portuguese was carried out. Translator 1 (T1) was a nurse, and university professor, who understood the construct and had experience in translating instruments. Translator 2 (T2) was a professional with a degree in Portuguese/Spanish literature and did not know the concepts studied to provide a version that best reflected the language used by the target population. In stage 2, the translations were summarized by the researchers. They had the role of debating and mediating translation differences, assessing semantic, conceptual, linguistic, and conceptual discrepancies to achieve a single version.

In stage 3, it was checked whether the Portuguese version reflected the original content through back-translation into Spanish by each translator. This was carried out by two bilingual translators who were native speakers of the instrument's original language, Spanish, and who had no experience in translating health concepts. After this process, the stages were summarized by the researchers, as well as a guest researcher fluent in Portuguese and Spanish. This stage resulted in the synthesized version of the instrument in Brazilian Portuguese. Once the translation was complete, a committee of ten experts reviewed it in stage 4, agreeing with the minimum number suggested by Pasquali[15], which is six.

Those who met at least two of the three eligibility criteria were considered eligible to take part: proficiency in Spanish, experience in the field of diabetic foot, and having previously taken part in research involving the translation and validation of scales. The criteria for selecting the specialists were adapted from Fehring[16]: having a doctorate (2 points), a thesis in the area of interest to the study (3 points), a master's degree (1 point), a dissertation in the area of interest (2 points), an article published in an indexed journal on the area of interest to the study (1 point), recent professional practice (clinical, research or teaching) of at least two years (2 points), and being a specialist in the area of interest to the study (2 points). A minimum score of five points was required.[16]

The experts were selected by searching their CVs on the Lattes Platform on the website of the National Council for Scientific and Technological Development (CNPq) using the terms "diabetic foot", "nursing" and "stomatherapy" and the snowball sampling technique: "diabetic foot", 'nursing' and 'stomatherapy' and by the snowball sampling technique.[17] Thirty-two specialists were contacted via email or telephone. Of these, ten agreed to take part in the study, 17 did not respond to the contact, one dropped out and four did not accept the invitation.

Each specialist received the invitation letter via e-mail and a link on Google Forms containing the Free and Informed Consent Term (FICT), the specialist characterization form, the original version and the version translated into Brazilian Portuguese, a compilation of the translation, back-translation, and their summaries, a questionnaire for assessing equivalences and the instructions for completing it.

In the instrument for evaluation by the experts, they were asked to judge the items on their semantic, idiomatic, cultural, and conceptual equivalence, answering according to the options distributed on a Likert scale: 1- Item not equivalent; 2- Item needs major revision to be equivalent; 3- Item needs minor revision to be equivalent and 4- Item equivalent. A space was also provided for considerations and suggestions for changes to the instrument.

In the stage 5, after the equivalences had been assessed by the experts, a pre-test was carried out with the target audience. The final version of the instrument proposed by the experts was applied to a representative number of the target population to check their understanding of the translated instrument. At this stage, the completion time and font size were also assessed. This stage was carried out at the Integrated Diabetes and Hypertension Center (IDHC), chosen because it is a benchmark in the state of Ceará, Brazil, for secondary-level care for people with diabetes and hypertension.

The pre-test was carried out on a convenience sample of 32 people with diabetes. The inclusion criteria were: having completed at least the 6th grade of Elementary School, being over 18 years of age, and having the cognitive ability to answer the questionnaire. The Brazilian version of the questionnaire was given to the people with diabetes to answer. At this point, the researchers timed how long it took them to fill it in and observed how the patients answered the questionnaire, noting down details, items that generated doubts, and what kind of help they asked for.

After the instrument had been applied, the participants were questioned about how they had filled it in, the clarity of the instrument, and their suggestions, to observe their relevance and make possible changes. Finally, in stage 6, the documents were sent to the authors of the original instrument for suggestions and/or approval of the final version.

The data from the pre-test and the expert committee evaluation were organized and compiled in Microsoft Excel spreadsheets and analyzed using the IBM® Statistical Package for the Social Science (SPSS), version 23.0. The quantitative and qualitative variables were analyzed descriptively (simple and percentage frequency, measures of central tendency, and dispersion). Data normality was demonstrated using the Kolmogorov-Smirnov test.

The Content Validity Index (CVI) was calculated to ensure the objectivity of content validity, considering the CVI of the items (CVIi) > 0.90 to be excellent. The following evaluation standard was adopted: CVI ≥ 0.78 excellent, CVI from 0.60 to 0.71 good, and CVI < 0.59 poor.[17]

The reliability of the agreement between the evaluation of the items and the evaluation of the experts was analyzed using Kappa, with the following classification: excellent agreement (0.81 to 1.0); moderate (0.61 to 0.80); weak (0.41 to 0.60); slight (0.40 to 0.21) and negligible (0.20 to 0.00). The Exact Binomial Distribution Test was also carried out, which is suitable for small samples, with a significance level of $p > 0.05$ and a proportion of 0.80 for agreement to estimate the statistical reliability of the CVIs. The results were presented in tables and charts for better visualization[18] and analyzed according to the relevant literature.

The study complied with the legal principles of Resolution number 466/2012 of the National Health Council and was approved by the Research Ethics Committee (REC) of Faculdade Pitágoras de Fortaleza under opinion number: 4.204.710 and CAAE: 30780420.4.0000.8367.

RESULTS

The two translation versions T1 and T2 were similar. In the synthesis of the translations, in most cases, the textual language of the T2 version was chosen, as the translator was not from the health sector and was closer to the target audience for which the instrument was developed. The most significant differences between the two translations were in the terms "reviews", "examines" and "evaluates". As these words have similar meanings, it was decided to standardize the term when it best suited the answer. The translation of the answer options differed little between T1 and T2. In the back-translation, most of the items achieved parity between RT1 and RT2. The divergent terms or expressions were synonymous in Spanish and Portuguese.

The ten experts selected, according to the selection criteria, obtained an average score of 8.1 ± 3.0, with a range of five to 13 points, confirming the high degree of expertise and competence of the experts, which is relevant for the evaluation and adaptation of the instrument.

Most of the specialists were female (nine) and worked in care (seven). The specialists came from three Brazilian regions: Northeast (five), Southeast (four) and South (one), including the states of Ceará (four), São Paulo (three), Santa Catarina (one), Minas Gerais (one) and Paraíba (one). It should be noted that experts from the North and Midwest regions were invited, but were unsuccessful. To adapt the instrument to the Brazilian context, we tried to include different regions, due to their continental dimensions and cultural diversity.

All of them were nurses, with constant training through lato sensu (specialization - nine) and stricto sensu (master's - nine and doctorate - seven) postgraduate degrees. All the specialists had experience in diabetes education, diabetic foot care, and professional experience in diabetic foot care.

In terms of semantic, idiomatic, cultural, and conceptual equivalence, the items had excellent CVIs (≥0.90).[17] It was observed that item 3 (checking the condition of the nails) had a CVI = 0.90 in the idiomatic validation and item 15 (wearing shoes in summer) had a CVI = 0.90 in all the criteria analyzed. As for the binomial test, there was no significant disagreement between the experts regarding the scoring of the items (p>0.05) (Table 1).

Table 1. Content Validity Index and Binomial Exact Test of the questionnaire items. Fortaleza (CE), Brazil, 2022.

	Items	CVIi[a]	p[b]
Domain 1: Self-care		**0.99**	**-**
1	Do you usually check your feet?	1.00	0.107
2	Do you check your feet yourself for sores or the condition of the skin?	1.00	0.107
3	Do you check the condition of your nails? Do not answer if you have all your toes amputated.	0.97	0.070
4	How important do you think the frequency of your foot care is?	1.00	0.107
5	Concerning recommendations on how you should look after your feet.	1.00	0.107
6	For yourself, take care of skin lesions such as dryness and calluses.	1.00	0.107
Domain 2: Self-management and self-examination		**1.00**	**-**
7	To dry your feet:	1.00	0.107
8	Is it difficult for you to find comfortable shoes for your feet?	1.00	0.107
9	How often do you cut or treat your toenails? Do not answer if you have all your toes amputated.	1.00	0.107
10	Is it difficult for you to dry your feet after showering? Do not answer if you have all your toes amputated.	1.00	0.107
11	Do you find it difficult to find suitable socks for your feet?	1.00	0.107
Domain 3: Footwear (shoes and socks)		**0.98**	**-**
12	Concerning conventional footwear, before wearing them.	1.00	0.107
13	Concerning socks.	1.00	0.107
14	With new shoes.	1.00	0.107
15	With summer shoes, in excessively hot weather.	0.90	0.651
16	To warm up your feet.	1.00	0.107
	CVIt[c]	**0.99**	-

a: Content Validation Index of the item per criterion assessed; b: Binomial Test; c: Total Content Validation Index.
Source: Prepared by the authors (2022).

The Self-management and self-examination domains had the highest CVI (CVI = 1.00), followed by the Self-care (CVI = 0.99) and Footwear (shoes and socks) domains (CVI = 0.98), all of which were considered excellent.

In their comments, one specialist pointed out the economic aspect of buying shoes and socks, which in Brazil are still very expensive for patients. Two experts did not make any suggestions, and there were no considerations on item 8. In addition, some suggestions made by the experts were accepted.

The pre-test was carried out with 32 people with diabetes, the majority of whom were DM1 (17; 53.1%), and women (17; 53.1%), with an average age of 46.1+17.1 years and a range from 21 to 75 years. Disease duration ranged from three to 54 years, with a median of 17 years. The majority (25; 87.5%) used insulin and measured their blood glucose daily (23; 71.9%).

Of the participants, 16 found the instrument easy to answer. Only one found it very difficult. This data shows that the target audience was able to understand the instrument (81.3%).

The time taken to complete the questionnaire ranged from three to 15 minutes, with an average of 7.3+3.6. It should also be noted that only five (15.6%) participants needed help to answer the questionnaire and nine (28.1%) had doubts about some items. Overall, (30; 93.8%) found the instrument clear.

In addition, all the items were read out in full to the participants of the target population to identify any possible doubts. The items that generated the most doubts about proper foot care were 1, 2, 3, 6, 9, 11, 12, 13, 14 and 16. In items 3 and 9, some participants thought that going to the manicurist was taking care

of their feet. One participant mentioned that item 4 (How important do you think the frequency of foot care is?) did not have a compatible option for his answer, as he considers it relevant but does not take care of it. There was also one participant who took around two minutes to answer item 12.

In addition, some participants didn't understand that they had to mark only one answer option in each item, which required the researcher's intervention to re-read and explain the items. It should also be noted that the term "synthetic sock" in item 13 was not understandable to two patients, so we decided to add some examples of synthetic fabrics to the item.

When applying the instrument, it was noticed that some of the options in items 12 and 14 were confused by the target audience. It was therefore decided to make a change and keep item 12 with alternatives aimed at evaluating self-care behavior related to shoes worn on a daily basis and item 14 at caring for new shoes.

In item 15, one patient marked two alternatives. The answer to two options may not be a misunderstanding of the item, but rather an alternation in self-care, sometimes adequate, sometimes inadequate, which may be a direction in the guidelines for the patient.

It should be noted that the observations and suggestions made by the target audience were welcomed and modifications were made. There were no suggestions or difficulties reported or observed with the layout of the instrument, which remained similar to the original.

After the observations made by the target audience, some suggestions were accepted. Chart 1 shows the changes made.

Chart 1. Changes made to the questionnaire following suggestions from the target audience. Fortaleza (CE), Brazil, 2022.

Items	Changes made	Reasons
1) Do you usually assess your own feet yourself?	1. Do you usually assess your feet?	Objectivity.
4) C. I think it's important and I look after them, but I don't check my feet daily.	C. I think it's important, but I don't look after or check my feet daily.	It was considered that when the patient already knows that it is important, it becomes easier to carry out self-care.
6) A. I use a moisturizing cream and soft sandpaper.	A. I use moisturizing cream combined or not with a soft sandpaper.	Using only moisturizer is also a way of treating dryness and calluses.
11) E. It's impossible for me to find suitable socks.	E. It's impossible for me to find suitable socks / I don't wear socks.	Wearing socks is recommended to prevent diabetic foot problems.
12) Concerning the shoes you wear daily before you wear them.	12. Regarding the shoes you wear every day, before putting them on.	As item 12 generated many doubts, the term "wear" was changed to "put on".
12) C. I check whether it's comfortable and flexible, but without trying it on.	C. I check that it's comfortable and flexible, but I don't look inside.	The doubts raised in option C of item 12 led to the term "try on" being changed to "look inside" to improve compression, as well as taking into account the guidelines of the diabetic foot consensus.
13) C. I wear synthetic socks.	C. I wear synthetic socks (Examples: polyester, elastane, polyamide).	It was decided to add some examples of synthetic fabrics to the item, as two participants said they didn't know what "synthetic" was.
14) E. I don't pay any attention to new shoes.	E. I don't pay any attention to the choice of new shoes.	When applying the instrument, the researchers realized that items 12 and 14 were confusing to the target audience. They therefore decided to make a small change to item 12 and option E of item 14.
15) A. I wear footwear that is suitable for the heat (ventilated).	A. A. I wear shoes that are suitable for the heat (ventilated).	As this item generated doubts, it was decided to modify item A. The term "footwear" was changed to "shoes" to make it clearer for the target audience.
16) A. I wear wool or cotton socks.	A. I wear wool or cotton socks / I don't need to warm my feet.	A change was made to take into account the different climates in Brazil since there are regions that are cold and hot or only hot, as is the case in the northeast of Brazil, the region where the instrument was applied.

Source: Elaborated by the authors (2022).

Once the cultural adaptation process had been completed, the final version of the DFSQ-UMA-Br instrument was sent to the authors of the original instrument for their knowledge and approval of the compilation of translations and back-translations, the DFSQ-UMA items modified after suggestions from the experts and the DFSQ-UMA-Br (final version), which was approved.

DISCUSSION

This study made it possible to carry out the cultural adaptation of the DFSQ-UMA for Brazil. The proposed methodology ensured that the Brazilian version was similar to the original instrument, guaranteeing the semantic, idiomatic, cultural, and conceptual equivalences that were obtained according to the recommendations adopted.[14]

In the analysis phase of the DFSQ-UMA Brazilian version by the expert committee, it can be seen that the instrument was validated by qualified and experienced experts in the field. Revisions were therefore made to the translation and the wording was adjusted in order to adapt the items to Brazilian culture.

The questionnaire in the original language, DFSQ-UMA,[8] showed overall internal validity of α = 0.89, which is considered a high measure. In general, the results obtained for the metric performance of the DFSQ-UMA-Br are similar to those of the original version and the translated versions.[9,10,12] The Brazilian version showed excellent validation indices in the spheres it was analyzed, which is a credit to the quality of the process adopted.

In addition, a recently published systematic review on the measurement properties of instruments related to the assessment of the diabetic foot that use the specific PRO, recommended the (DFSQ-UMA) due to the positive results of the psychometric properties presented.[19]

An aspect suggested by the experts is related to the social issue that differs between the regions of Brazil and between the country of origin of the instrument, especially in terms of the availability and access to appropriate footwear for people with diabetes and diabetic neuropathy. In Brazil, because it is a developing country, in addition to the clinical epidemiology of diabetes, there are also problems arising from social determinants with economic impacts reverberating in complications and hospitalizations resulting from the lack of self-care for the feet.[20,21]

By including specialists from different regions of Brazil, it is inferred that the instrument covers the singularities of the country and can be used nationally. This diversity of specialists is relevant due to the heterogeneity of the country's population and the diversity of regional terms, which may not be understandable in all areas of the country.[22]

Due to other dimensions of self-care and self-management of diabetes, foot care is often overlooked and not prioritized, which justifies the items that had the lowest content validation rates, which are related to wearing shoes and checking nails. By including specialists from different regions of Brazil, it is inferred that the instrument covers the singularities of the country and can be used nationally. This diversity of specialists is relevant due to the heterogeneity of the country's population and the diversity of regional terms, which may not be understandable in all areas of the country.[22]

Due to other dimensions of self-care and self-management of diabetes, foot care is often overlooked and not prioritized, which justifies the items that had the lowest content validation rates, which are related to wearing shoes and checking nails.[23]

The DFSQ-UMA-Br managed to keep all the items and domains of the original instrument, which was made up of the three most important aspects of self-care for the feet of people with diabetes. All items were considered excellent. The lowest CVI was presented by item 15 (wearing shoes in summer), followed by item 3 (checking the condition of the nails), despite the excellent CVI, this value may be due to the difference in climate between Brazil and Spain, the country of origin of the instrument. Item 3 is possibly due to the cultural difference in the translation of the item. The DFSQ has already been translated into several languages[9-12] which showed excellent internal consistency.

The conceptual adaptation of the items for the target population and the consent of the author of the original instrument to the changes in the new version is an important stage in the translation process.[24] To complete this process, it is important to send all the material produced to the authors of the original instrument, which demonstrates reliability and seriousness in conducting the study.[25] The weakness or lack of some of these steps can compromise the adequacy of the instrument, imposing limits on its use, and it is important to follow internationally recognized standards.[26]

The DFSQ-UMA-Br proved to be understandable to patients and easy and quick to fill in. The studies of the instrument in its original version[10] and translations[9-12] did not show how long it took to complete. However, when compared with the literature, the DFSQ-UMA-Br did not show any differences found in other similar studies.[27-29] For some researchers, the estimated ideal time to fill in a questionnaire containing 20 to 30 questions is approximately 15 minutes.[30]

In addition to the methodological quality achieved, the subject matter covered by the instrument is also taken into consideration. Self-care for the feet of people with diabetes is a priority within the health scenario, given the possible complications that can be avoided with this practice. Prevention is the most coherent and acceptable solution to this complication.[31] The use of instruments with high methodological standards and scientific quality urgently needs to be applied in clinical practice and disseminated for the self-care of these people, to avoid foot complications.[23]

Finally, some limitations of the study should be considered, such as the absence of specialists from the North and Midwest regions and the need for evidence of the instrument's construct validity, preferably in different regions of Brazil and centers. However, it is worth noting that the instrument is in the process of clinical validation.

The DFSQ-UMA-Br can help guide and direct health professionals in their decisions to draw up a care plan geared towards the self-care needs of each patient's feet, as well as motivating and guiding self-care, to prevent complications in the feet of people with diabetes.

CONCLUSION

The DFSQ-UMA-Br proved to be a valid tool in terms of its content for assessing foot self-care behavior in people with diabetes, through patient-reported results, as well as being understandable to the patient and easy and quick to fill in.

CONTRIBUITIONS

Contributed to the conception or design of the study/research: Belchior AB, Oliveira SKPO Contributed to data collection: Belchior AB. Nascimento FG. Oliveira SKPO. Contributed to the analysis and/or interpretation of data: Belchior AB, Carvalho REFL. Sordi CC. Moreira TMM. Oliveira SKPO. Contributed to article writing or critical review: Belchior AB. Brilhante RRC. Carvalho REFL. Moreira TMM. Oliveira SKPO. Final approval of the version to be published: Belchior AB. Carvalho REFL. Nascimento FG. Sordi CC. Brilhante RRC. Moreira TMM. Oliveira SKPO.

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APPENDIX A - FINAL VERSION: THE DIABETIC FOOT SELF-CARE QUESTIONNAIRE OF THE UNIVERSITY OF MALAGA, SPAIN FOR BRAZIL (DFSQ-UMA-BR)

We'd like to know how you look after your feet. Please mark with an X the option that best represents what you actually do. Please answer all the questions. Thank you.

1. Do you usually assess your feet?
- A. Several times a day
- B. Once a day
- C. 2 to 3 times a week
- D. Once a week
- E. I don't assess my feet

2. Do you notice the presence of sores or how the skin on your feet?
- A. Once a day
- B. 2 to 3 times a week
- C. Once a week
- D. A few times
- E. I don't assess my feet

3. Do you notice how your nails look?
Don't answer if you've had all your toes amputated.
- A. Every day
- B. Once a week
- C. Once every 15 days
- D. Once a month
- E. I don't check my nails

4. How important is the frequency of your foot care?
- A. I think it's very important, I look after them every day.
- B. I think it's quite important.
I check my feet every day, but I don't pay any attention to caring for them.
- C. I think it's important, but I don't look after my feet every day.
- D. I think it's not very important. Sometimes I look after my feet.
- E. I don't think it's important, I don't watch or take care of my feet.

5. With regard to the guidelines on how you should look after your feet::
- A. I have received guidance and I look after my feet.
- B. I have received advice, but I don't look after my feet myself.
- C. I haven't received advice on how to look after my feet, but I try to..
- D. I have received advice on how to look after my feet, but I don't pay any attention to them.
- E. I haven't received any advice and I don't know how to look after my feet.

6. What do you do when your feet are dry and calloused?
- A. I use moisturizing cream with or without a soft sandpaper.
- B. I only use a soft sandpaper.
- C. I use some sharp material, such as blades, scalpels.
- D. I use some kind of callus product.
- E. I don't care about my feet.

7. To dry your feet:
- A. I use a towel just for my feet; I dry the sole of the foot and between the toes.
- B. I use a towel for my feet only and dry the sole of my foot.
- C. I use the same towel I use for my body; I dry the soles of my feet and between my toes.
- D. I let my feet dry naturally.
- E. I can't dry my feet.

8. Is it difficult to find comfortable shoes for your feet?
- A. Not difficult to find.
- B. It's a bit difficult to find.
- C. It's hard to find.
- D. It's very difficult to find.
- E. It's impossible to find.

9. How often do you cut or care for your toenails?
Do not answer if you have had all your toes amputated.
- A. I do it every 1 to 15 days.
- B. I do it between 15 and 30 days.
- C. I do it between 1 and 2 months.
- D. I do it more often than 2 months.
- E. I don't.

10. Is it difficult for you to dry your feet after showering?
Do not answer if you have all your toes amputated. .
- A. It's not difficult to dry.
- B. It's a bit difficult to dry.
- C. It's difficult to dry.
- D. It's very difficult to dry.
- E. It's impossible to dry.

11. Do you have trouble finding socks that suit your feet?
- A. I don't have any difficulties.
- B. I have little difficulty.
- C. I have moderate difficulty.
- D. I have a lot of difficulty.
- E. It's impossible for me to find suitable socks / I don't wear socks.

12. About the shoes you wear every day, before you put them on:
- A. I check that there are no objects inside, that it is seamless, roomy and has laces.
- B. I check that it's roomy and check the inside.
- C. I check that it's comfortable and flexible, but I don't look inside.
- D. I assess whether the model is attractive.
- E. I don't care about the shoes.

13. With regard to socks:
- A. I make sure they're cotton and seamless.
- B. I check that they don't squeeze the leg and ankle..
- C. I wear synthetic socks (examples: polyester, elastane, polyamide).
- D. The material makes no difference.
- E. I don't wear stockings or tights.

14. With regard to new shoes:
- A. I assess whether it's comfortable and, if not, I change the shoe.
- B. If it's not comfortable, I alternate it with more comfortable shoes.
- C. I try to adjust it by wearing it little by little.
- D. I don't care if it's not comfortable.
- E. I don't care about choosing new shoes.

15. On very hot days, what kind of shoes do you wear?
- A. I wear shoes suitable for the heat (ventilated).
- B. I alternate between open and closed shoes.
- C. I wear flip-flops or sandals.
- D. I often go barefoot.
- E. I don't pay attention or care.

16. To warm my feet:
- A. I wear wool or cotton socks / I don't need to warm my feet.
- B. I use heat sources such as heaters, hair dryers, thermal sheets.
- C. I use hot packs and foot baths.
- D. I shower with hot water.
- E. I don't care what I wear.