

Translation and validation of the Arabic Jordanian version of the diabetic foot ulcer scale-short form (DFS-SF)

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Abstract: The Diabetic Foot Ulcer Scale-Short Form (DFS-SF) is an important tool for assessing the quality of life of diabetic foot patients. This study aims to translate and validate the DFS-SF into Arabic and evaluate its validity and reliability. The translation process followed WHO guidelines, including forward translation, expert panel review, back translation, pre-testing, and final version development. The translated questionnaire was then administered to a sample of Arab Jordanian patients with diabetic foot ulcers. Validity was assessed by examining the correlation coefficients between each item and its corresponding dimension, as well as its correlation with the DFS-SF scale as a whole. Reliability was evaluated using Cronbach's alpha coefficient. The results demonstrated high validity and reliability of the Arabic Jordanian version of the DFS-SF, making it a valuable tool for assessing the impact of diabetic foot ulcers on patients' quality of life.

Keywords: Arabic Jordanian, Diabetic foot ulcer, Quality of life, Reliability, Translation, Validation.

1. Introduction

According to the International Working Group on the Diabetic Foot, diabetic foot is defined as the foot of diabetic patients with ulceration, infection, and/or deep tissue destruction, associated with neurological abnormalities and various degrees of peripheral vascular disease in the lower limb (1). Diabetic foot ulcers (DFUs) are a common complication of diabetes and can lead to significant morbidity and mortality (2). DFU is a significant cause of hospitalization and non-traumatic lower-limb amputations in people with diabetes (3). Wukich et al. (2018) believed that one of the most surprising things is that diabetics who suffer from foot problems, when asked about their greatest fear, the answer was losing a limb, which was greater than death itself (4). Multiple experiments demonstrated that individuals experiencing foot ulceration exhibit a considerable decline in their health-related quality of life (HRQoL) compared to those who do not encounter this complication (5, 6, 7, 8). Assessing the quality of life of diabetic foot patients is crucial for providing appropriate care and treatment (9). The Diabetic Foot Ulcer Scale-Short Form (DFS-SF) is a validated tool that measures various dimensions of quality of life related to DFUs. However, the DFS-SF is not currently available in Arabic Jordanian. Therefore, this study aims to translate and validate the DFS-SF into Arabic to enable its use among Arab patients with DFUs.

2. Methods

2.1. Translation Process

The translation process followed the guidelines provided by the World Health Organization (WHO). It included forward translation, expert panel review, back translation, pre-testing, and final version development (10). Two wound specialist nurses, proficient in both English and Arabic, were involved in the forward translation. They independently translated the questionnaire, which was then reconciled to produce version 1. The expert panel, consisting of researchers and healthcare

professionals, reviewed version 1 to ensure accuracy and appropriateness. A local professional translator, fluent in English and Arabic, conducted the back translation to create version 2. The final version was developed after conducting cognitive interviews with native Arabic-speaking patients to assess its clarity and suitability.

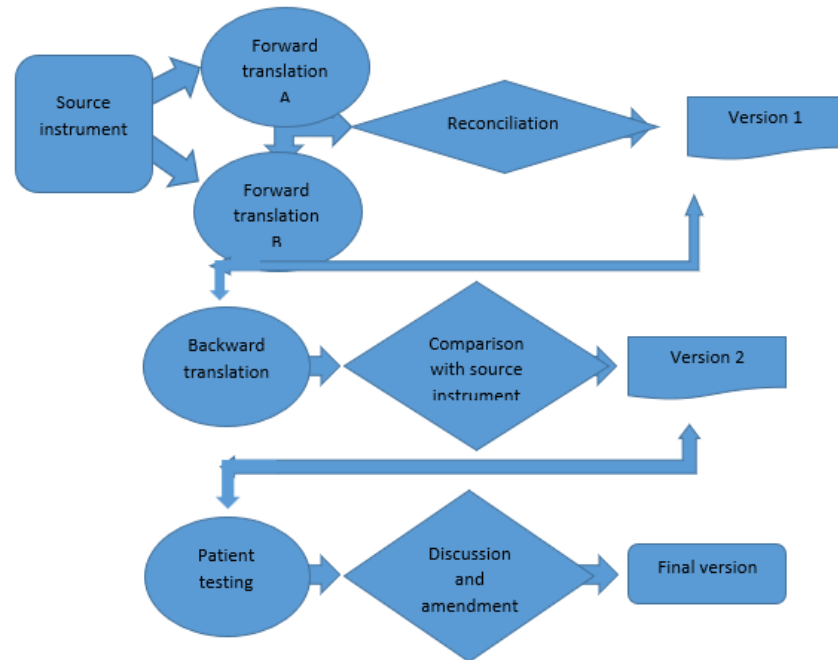


Figure 1.
Algorithm of the linguistic validation process.
Source: MAPI, 2021.

2.1. (a) Forward Translation: Creating Version 1

2.1.1. Recruiting Bilingual Wound Specialist Nurses and the Researcher as a Coordinator

In this pivotal phase of forward translation, two wound specialist nurses, proficient in both the source (English) and target (Arabic, Jordanian) languages, will be engaged. Additionally, the coordinator of this research will play a crucial role in overseeing the process. This step aims to produce Version 1 of the questionnaire.

2.1.2. Independent Translations Producing Independent Translations for Reconciliation

The two appointed wound specialist nurses will independently render forward translations of the questionnaire. These translations will then be reconciled to generate a single, harmonized Version 1. During this process, emphasis will be placed on utilizing clear, concise, and readily understandable language, favoring comprehensibility over literal translation.

2.2. (b) Backward Translation: Refining into Version 2 Recruiting a Native Source Language Translator

In the Backward Translation Step, a local professional translator, fluent in the source language (English) and a native speaker, will be recruited. Collaborating with a wound specialist nurse proficient in English, this translator will render the questionnaire back into English. The coordinator will meticulously compare this backward version with the original instrument to identify and rectify any misconceptions, mistranslations, or errors. This meticulous process will yield Version 2.

2.3. (c) Patient Testing: Ensuring Clarity and Acceptance Validating the Final Version

To validate the final version, the translated questionnaire will be administered to a sample of patients who are native speakers of the target language (Arabic, Jordanian). Personal interviews will be conducted individually, and their responses will undergo qualitative analysis. Any comments or concerns raised by participants will be carefully addressed. This iterative process aims to ensure the questionnaire's clarity and suitability for the target population. Ultimately, the final version of the questionnaire, DFU-SF, will be ready for use. As part of the testing process, ten patients with DFUs will evaluate the questionnaire, with one objective being to measure the time required for completion. The detailed steps are shown in Figure 2.

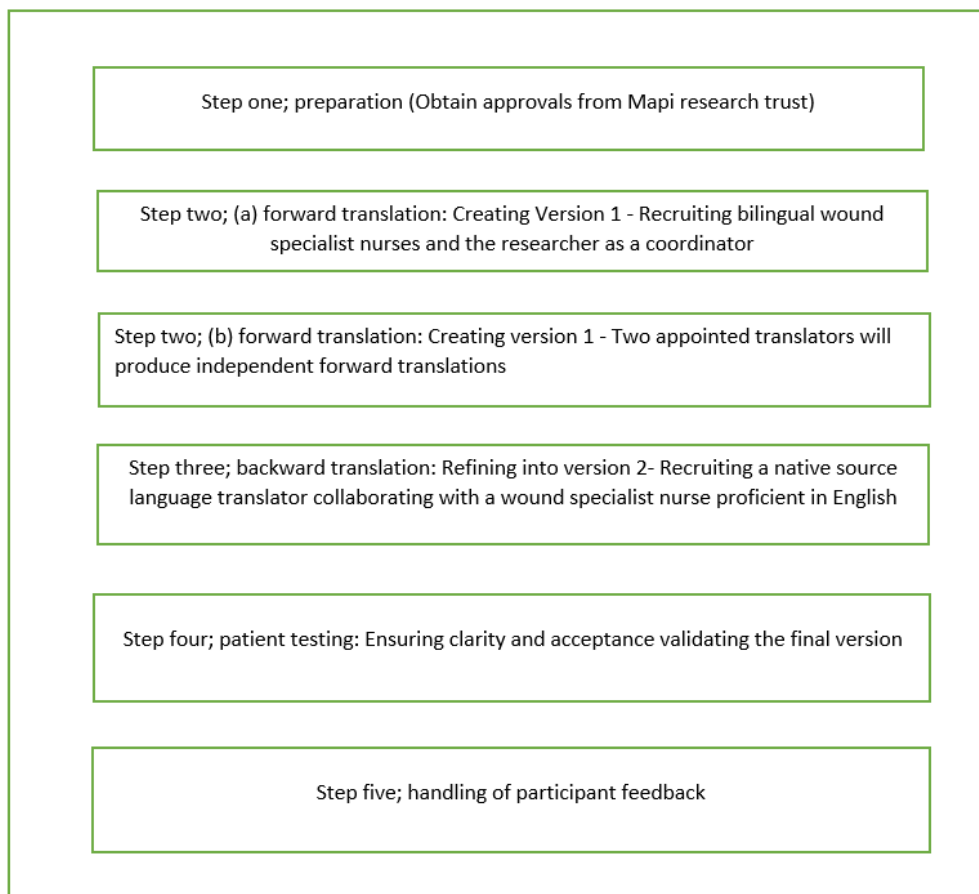


Figure 2.
Translate progress.

3. Validation and *Reliability* the Arabic Jordanian Version of the Instrument

Validating the Arabic Jordanian version of the instruments is a critical step in ensuring that they accurately measure what they are intended to assess. Validation, in essence, confirms whether the measurements align with the intended constructs or purposes of the research (11). One fundamental aspect of validation involves expert panel judgment, where a group of experts evaluates the instrument to determine its construct and content validity (12).

Construct validity is particularly essential as it assesses whether the instrument accurately captures the underlying construct or concept of interest. An erroneous or insufficient understanding of the construct being measured can lead to inaccurate results.

In the context of the Arabic Jordanian version of the instruments, it is crucial to involve experts who are knowledgeable about the specific constructs and cultural nuances relevant to the Jordanian population. Their expert judgment can help ensure that the instruments align with the intended measurements and accurately capture the constructs under investigation. This rigorous validation process is essential to guarantee the reliability and validity of research findings when utilizing these instruments in Jordanian contexts.

3.1. (a) Content and Construct Validity (Expert Panel Analysis)

Confirming the accuracy of an instrument, specifically whether the data it collects corresponds to the desired information, is a fundamental requirement before employing it in any social research endeavor or study (13). This validation process is paramount to ensuring that the instrument effectively measures the intended constructs, aligning its outcomes with the research objectives.

According to the definition of content validity, it refers to how closely assessment instrument components relate to and reflect the specified concept for a given assessment purpose (14).

In ensuring the highest quality of instruments, obtaining valid and reliable evidence is crucial. One common method to assess instrument quality involves consulting experts, a process known as expert judgment (15). Almanasreh et al. describe content validation by expert judgment as an educated opinion from a person with experience in the field who is regarded by others to be a competent expert and who can provide knowledge, proof, and assessment (16).

In the study, the translation process of the Diabetic Foot Ulcer Scale-Short Form (DFU-SF) into Arabic Jordanian language followed a meticulous and rigorous procedure. First, the original English version of the questionnaire was accurately translated into Arabic Jordanian, ensuring precision in cross-cultural and cross-context translation. To maintain the translation's accuracy, a team of skilled translators, including experts in linguistics and medical terminology, was involved. This collaborative effort aimed to capture the nuanced meanings of the questions and ensure cultural relevance.

Following the initial translation, the Arabic Jordanian version of the questionnaire underwent a comprehensive evaluation process. An expert panel, comprising professionals well-versed in diabetes care, wound management, and Arabic language nuances, meticulously reviewed the translated questionnaire. Through a series of face-to-face interviews, these experts provided their insights and opinions on the questionnaire's content validity. The expert panel's feedback was instrumental in refining the language, ensuring that the questions were clear, concise, and culturally appropriate for the Arabic Jordanian context. Moreover, a sample group of individuals, representative of the target population, was invited to participate in the testing phase. Their responses were analyzed to confirm the questionnaire's clarity, understanding, and validity within the Arabic Jordanian cultural context. This thorough translation and validation process ensured that the Arabic Jordanian version of the DFU-SF accurately captured the intended meanings and effectively assessed diabetic foot ulcer-related concerns in the local population.

Table 1.
Expert checklist of content validity.

Job title	Education	Experts	Working place	Opinion
Nurse	MS	Critical case	Al-Iman hospital	Agree
Nurse	MS	Wound care	Al-Iman hospital	Agree
Nurse	MS	Wound care	Al-Iman hospital	Basically agree

3.2. (b) Reliability

To ensure the reliability of the DFS-SF, it was applied to a pilot sample consisting of (25) individuals who were selected from outside the original sample and from the research population. The DFS-SF reliability equation (Cronbach's alpha) was applied to all dimensions of the reliability and the DFS-SF as a whole, and Table 4.2 illustrates that.

Table 2.
Cronbach's alpha coefficients for DFS-SF.

No.	Dimensions	Items no.	Cronbach's alpha
1	Leisure	5	0.83
2	Physical health	5	0.88
3	Dependence/Daily life	5	0.87
4	Negative emotions	6	0.90
5	Worried about ulcers/Feet	4	0.82
6	Bothered by ulcer care	4	0.87
Total		29	0.96

Table 4.2 shows that Cronbach's alpha coefficients ranged between .82 to .90, and all reliability coefficients are high and acceptable for applying the research, where the reliability coefficient (Cronbach's alpha) is acceptable if it exceeds .70

4. Limitations

Despite the rigorous translation and validation process, this study has some limitations. First, the sample size for the validity and reliability assessments was relatively small, which may limit the generalizability of the findings. Future studies should consider recruiting larger and more diverse samples to further establish the validity and reliability of the Arabic Jordanian version of the DFS-SF. Additionally, the study focused specifically on Arab patients with DFUs in Jordan, which may restrict the generalizability of the results to other populations or contexts. Further research should explore the applicability and psychometric properties of the translated questionnaire in different Arab populations and settings.

5. Conclusion

This study successfully translated and validated the Arabic Jordanian version of the DFS-SF, a tool for assessing the quality of life of diabetic foot patients. The rigorous translation process, expert panel review, and cognitive interviews ensured the accuracy and suitability of the translated questionnaire. The validity analysis demonstrated strong correlations between the items, dimensions, and the overall scale, indicating that the translated version accurately measures the intended constructs. The reliability analysis revealed high internal consistency, indicating that the questionnaire consistently measures the same underlying constructs. The Arabic Jordanian version of the DFS-SF can now be confidently used in clinical practice and research settings to assess the impact of DFUs on patients' quality of life among Arab populations. Further studies with larger and more diverse samples are warranted to confirm the generalizability of these findings.

The theoretical and contextual contribution of this research lies in its endeavor to translate and validate the Diabetic Foot Ulcer Scale-Short Form (DFS-SF) into Arabic, specifically for the Jordanian population. Diabetic foot ulcers (DFUs) pose significant challenges and are associated with substantial morbidity and mortality. The translation process adhered to WHO guidelines, ensuring linguistic and cultural appropriateness. The study's significance to existing knowledge is underscored by the absence of the DFS-SF in Arabic Jordanian, hindering the assessment of the quality of life of diabetic foot patients in this context. The translated questionnaire's validation through correlation coefficients and reliability analyses attests to its robust psychometric properties. In the broader context, this research addresses a critical gap in healthcare by providing a culturally sensitive tool for evaluating the impact of DFUs on the daily lives of Arab Jordanian diabetic patients. This contribution is vital for tailoring effective interventions, treatment plans, and support to enhance the overall well-being and care of diabetic patients in Jordan. The study's thorough methodology and conclusive findings establish the Arabic Jordanian version of the DFS-SF as a valuable instrument for both clinical and research applications, contributing significantly to the enhancement of patient care in the Arab world.

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