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TRANSLATION OF DIABETES SELF-MANAGEMENT QUESTIONNAIRE (DSMQ) INTO INDONESIAN

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ABSTRACT

Measurement of patient capabilities in carrying out self-care can use the Diabetes Self-Management Questionnaire (DSMQ) instrument which includes some of the most important aspects of self-management, namely glucose management, diet control, physical activity, and the use of health care, but now the instrument is not yet available in The Indonesian version, so the instrument needs to go through the translation and back-translation process to used in the Bahasa version. This type of research is a descriptive study with translation and back-translation methods. There are no differences in the meaning of the results of the Third Translation Expert, only shows a change in the structure of the synthesis sentence that refers to the default Bahasa orders. DSMQ instruments have been through the translation process with the back-translation method which produces a good translation. Therefore, for the follow-up of this study, researchers recommend conducting validity and reliability tests to determine the feasibility of the instruments.

KEYWORDS
Diabetes Self-Management Questionnaire; Translation; Indonesian

INTRODUCTION

Diabetes mellitus Type 2 is a disease that cannot be cured but can be controlled and can cause problems and complications such as an increase in body mass index, uncontrolled of diabetes mellitus. Self-care is one of the self-management of diabetes mellitus and needs to get adequate glycemic control.(Safila, 2015). All humans need to carry out self-care and have the right to maintain self-care. According toOrem, (2001)Self-care is a human need where individuals try to maintain, maintain and improve the quality of life of patients for life, welfare, and healing of disease and avoid complication (Alligood, 2014).

To minimize the complications of Diabetes Mellitus Type 2, several components of self-care are needed like as monitoring blood glucose levels, optimal physical exercise controls, compliance with treatment, and proper foot care (American Diabetes Association, 2018; Tewahido & Berhane, 2017). Therefore, to identify this, a survey needs to see the ability of diabetes mellitus patients to carry out self-care andlater patients who have less self-management, need to be given education or assistance by health workers.

In the measurement of patient capabilities in conducting self-care, researchers choose to use the Diabetes Self-Management Questionnaire (DSMQ) developed by Schmitt et al., (2013)The questionnaire takes into account the most crucial aspects of self-management, namely glucose management, diet control, physical activity, and the use of health care, but this time instrument is not yet available in the Indonesian version, so that instrument needs to go through the translation process and back-translation to used in the Bahasa version (Igland et al., 2021; Sousa et al., 2022). Back-translation methods are used for identifying translation errors. The results of the instrument that has been translated with the back-translation can be used for further research processes (Hidayat et al., 2020 ; Indriartiningtias et al., 2018). Therefore,

researchers want to carry out a translation process with the method of back-translation on the Diabetes Self-Management Questionnaire (DSMQ) instrument to produce instruments in the Bahasa version to assess and see the ability of diabetes mellitus patients in self-care.

METHOD

This type of research is a descriptive study with methods of translation and back-translation (Fransen et al., 2011). The translation process is carried out through 3 stages. which is the first phase of translation of the original instrument into Bahasa by the three translators, the second stage of the synthesis process where the result of the translation by the three experts, the process of synthesis by the one translator to see the results of the translations are easy to understand, and the third stage is back-translation where after the synthesis process completed then the back translation is done to see the similarity of the instrument from the translation resulting with the original instrument. The criteria for translators involved in translating this questionnaire are people who have experience living abroad so they can speak English well. Some of these translators have a background in the health sector and some are not from the health sector. The design of this study aims to produce an instrument of the Diabetes Self-Management Questionnaire (DSMQ) in the Indonesian version.

RESULTS

The results of the steps of work with using the translation and back-translation method can be seen at the stages below with examples of several question items from the instrument used by the researcher.

1. Stage 1: Translation

Translation of the original instruments into Bahasa by the three translators, who have a license to translate, one of them is from the nursing field. Stage 1 results showed that there is no difference in meaning from the results of the third translation expert.

Table 1. Translation process

No	Original questionnaire	Bilingual 1	Bilingual 2	Bilingual 3
1	I check my blood sugar levels with care and attention. Blood sugar measurement is not required as a part of my treatment.	Pengukuran gula darahtidakdiperlukansebagaibagiandariperawatanku.	Saya memeriksakadar gula darahdengannhati-hati dan penuhperhatian. *Pengukuran gula darah tidak diperlukan sebagaibagiandari perawatan saya.*	Saya memeriksakadar gula darah sayadengan hati-hati dan perhatian. *Pengukuran gula darah tidak diperlukansebagaibagian dari perawatansaya.*
2	The food I choose to eat makes it easy to achieve optimal blood sugar levels.	Makanan yang saya pilih untuk dimakan membuat saya mudah untuk mencapai tingkat gula darah yang optimal.	Makanan yang saya pilih untuk di makan memudahkan saya mencapai kadar gula darah optimal.	Makanan yang saya pilih untuk di makan membuatnya mudah mencapai kadar gula darah yang optimal.
3	I keep all doctors' appointments recommended for my diabetes treatment.	Saya menyimpan semua perjanjian dengan dokter yang direkomendasikan untuk perawatandiabetesku.	Saya mematuhi semuaperjanjian pertemuan dengandokter yang dianjurkan untuk perawatan diabetes saya.	Saya menyimpan semua janji dokter yang direkomendasikan untuk perawatan diabetes saya.
4	I take my diabetes medication (e. g. insulin, tablets) as	Saya lakukan semua pengobatan diabetesku (misalnya, insulin,	Saya mengkonsumsiobat diabetes saya (misal: insulin, tablet)	Saya meminum obat diabetes saya (misalnya insulin,

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	prescribed. ☐ Diabetes medication / insulin is not required as a part of my treatment.	tablet-tablet) seperti yang diresepkan. ☐Pengobatan diabetes/ insulin tidak diperlukansebagai bagian dari perawatanku.	sesuai yang diresepkan. ☐*Obat diabetes /insulin tidak diperlukan sebagaibagian dari perawatan saya.*	tablet) seperti yang ditentukan. ☐ Obat diabetes / insulin tidak diperlukan sebagai bagian dari perawatansaya.
5	Occasionally I eat lots of sweets or other foods rich in carbohydrates.	Kadang-kadang saya makan banyak gula-gula atau makanan-makanan lain yang kaya akan karbohidrat.	Kadang-kadang saya makanbanyakmakanan manis atau makanan lainnya yang kaya akan karbohidrat.	Terkadangsayamakanbanyakpermenataumakanan lain yang kaya karbohidrat.
6	I record my blood sugar levels regularly (or analyse the value chart with my blood glucose meter). ☐ Blood sugar measurement is not required as a part of my treatment.	Saya catat tingkat gula darahku secara teratur (atau menganalisis bagan nilai dengan meteran glukosa darah). ☐Pengukuran gula darah tidak diperlukan sebagai bagian dari perawatanku.	Saya mencatat kadar gula darah saya secara teratur (atau menganalisis grafik nilai dengan pengukuran glukosa darah saya). ☐ Pengukuran gula darah tidak diperlukan sebagai bagian dari perawatan saya.	Saya mencatat kadar gula darah saya secara teratur (atau menganalisis grafik nilai dengan meteran glukosa darah saya). ☐ Pengukuran gula darah tidak diperlukan sebagai bagian dari perawatan saya.
7	I tend to avoid diabetes-related	Saya cenderung menghindari perjanjian	Saya cenderung menghindari perjanjian	Saya cenderung menghind
	doctors' appointments.	dokter yang berhubungan dengan diabetesku.	pertemuan dengan dokter terkait diabetes.	ari janji dokter terkait diabetes.
8	I do regular physical activity to achieve optimal blood sugar levels.	Saya lakukan kegiatan fisik secara teratur untuk mencapai tingkat gula darah yang optimal.	Saya melakukan aktivitas fisik secara teratur untuk mencapai kadar gula darah optimal.	Saya melakukan aktivitas fisik secara teratur untuk mencapai kadar gula darah yang optimal.
9	I strictly follow the dietary recommendations given by my doctor or diabetes specialist.	Saya secara ketat mengikuti rekomendasi pola makan yang diberikan oleh dokterku atau spesialis diabetes..	Saya sangat mematuhi rekomendasi diet yang diberikan dokter saya atau spesialis diabetes.	Saya benar-benar mengikuti rekomendasi diet yang diberikan oleh dokter saya atau spesialis diabetes..
10	I do not check my blood sugar levels frequently enough as would be required for achieving good blood glucose control. ☐ Blood sugar measurement is not required as a part of my treatment.	Saya tidak cukup sering mengecek tingkat gula darahku yang seharusnya diperlukan untuk mencapai kontrol glukosa darah yang baik. ☐ Pengukuran gula darah tidak diperlukan sebagai bagian dari perawatanku.	Saya tidak memeriksa kadar gula darah saya cukup sering sebagaimana yang dibutuhkan untuk mencapai kontrol gula darah yang baik.	Saya tidak memeriksa kadar gula darah saya cukup sering seperti yang diperlukan untuk mencapai kontrol glukosa darah yang baik. ☐ Pengukuran gula darah tidak diperlukan sebagai bagian dari

				perawatan saya.
11	I avoid physical activity, although it would improve my diabetes.	Saya menghindari kegiatan fisik walaupun itu akan meningkatkan diabetesku.	Saya menghindari aktivitas fisik, walaupun itu baik bagi penyembuhan diabetes saya..	Saya menghindari aktivitas fisik, meskipun itu akan memperbaiki diabetes saya.
12	I tend to forget to take or skip my diabetes medication (e. g. insulin, tablets). ☐ Diabetes medication/insulin is not required as a part of my treatment.	Saya cenderung lupa melakukan atau melewatkan pengobatan diabetesku (misalnya insulin, tablet-tablet). ☐ Pengobatan diabetes/insulin tidak diperlukan sebagai bagian dari perawatan ku.	Saya cenderung lupa meminum atau melewatkan obat diabetes saya (misalnya insulin, tablet). ☐ Obat diabetes/insulin tidak diperlukan sebagai bagian dari perawatan saya.	Saya cenderung lupa untuk mengambil atau melewatkan obat diabetes saya (misalnya insulin, tablet). ☐ Obat diabetes/insulin tidak diperlukan sebagai bagian dari perawatan saya.
13	Sometimes I have real 'food binges' (not triggered by hypoglycaemia).	Kadang-kadang saya betul-betul makan "terlalu banyak makanan" (tidak dipicu oleh hipoglikemia = kekurangan glukosa dalam aliran darah).	Kadang-kadang saya benar-benar "gila makanan" (bukan dipicu hipoglikemia).	Terkadang saya memiliki 'binguan makanan' yang nyata (tidak dipicu oleh hipoglikemia).
14	Regarding my diabetes care, I should see my medical practitioner(s) more often.	Sehubungan dengan perawatan diabetesku, saya seharusnya menemui dokter praktekku lebih sering lagi.	Terkait perawatan diabetes saya, saya harus menemui dokter medis saya lebih sering.	Mengenai perawatan diabetes saya, saya harus lebih sering menemui dokter medis saya.
15	I tend to skip planned physical activity.	Saya cenderung melewatkan kegiatan fisik yang direncanakan.	Saya cenderung melewatkan aktivitas fisik yang sudah direncanakan..	Saya cenderung melewatkan aktivitas fisik yang direncanakan.
16	My diabetes self-care is poor.	Perawatan mandiri terhadap diabetesku buruk..	Perawatan mandiri diabetes saya terbilang buruk.	Perawatan mandiri saya terhadap diabetes buruk.

2. Stage 2: Synthetic Process

The results of the translation of the three experts, the synthesis process was carried out by one of the experts from the nursing field to see the results of the translation that was easy to understand. Stage 2 results show a change in the structure of the synthesis results that refer to the default Bahasa order.

Table 2.*Synthesis process*

No	Original questionnaire	Synthesis process
	The following statements describe personal care activities associated with your diabetes. Think about your care over the last 8 weeks. Determine how much each statement reflects your condition.	Pernyataan-pernyataan berikut ini menggambarkan aktivitas-aktivitas perawatan diri yang terkait dengan penyakit diabetes anda. Pikirkan kembali perawatan diri anda selama 8 minggu terakhir, silahkan tentukan sejauh mana setiap pernyataan sesuai dengan kondisi anda.
1	I check my blood sugar levels with care and attention. Blood sugar measurement is not	Saya memeriksa kadar gula darah dengan hati-hati dan penuh perhatian. Pengukuran gula darah tidak diperlukan

	required as a part of my treatment.	sebagai bagian dari perawatan saya.
2	The food I choose to eat makes it easy to achieve optimal blood sugar levels.	Makanan yang saya pilih untuk dimakan memudahkan saya mencapai kadar gula darah optimal.
3	I keep all doctors' appointments recommended for my diabetes treatment.	Saya menyimpan semua perjanjian dengan dokter yang direkomendasikan untuk perawatan diabetes saya.
4	I take my diabetes medication (e. g. insulin, tablets) as prescribed. ☐ Diabetes medication / insulin is not required as a part of my treatment.	Saya meminum obat diabetes saya (misalnya insulin, tablet) seperti yang ditentukan/resepkan. ☐ Obat diabetes/insulin tidak diperlukan sebagai bagian dari perawatan saya.
5	Occasionally I eat lots of sweets or other foods rich in carbohydrates.	Kadang-kadang saya makan banyak makanan manis atau makanan lainnya yang kaya akan karbohidrat..
6	I record my blood sugar levels regularly (or analyze the value chart with my blood glucose meter). ☐ Blood sugar measurement is not required as a part of my treatment.	Saya mencatat kadar gula darah saya secara teratur (atau menganalisis nilai pada grafik dengan pengukur glukosa darah saya). ☐ Pengukuran gula darah tidak diperlukan sebagai bagian dari perawatan saya.
7	I tend to avoid diabetes-related doctors' appointments.	Saya cenderung menghindari perjanjian dengan dokter yang terkait dengan diabetes.
8	I do regular physical activity to achieve optimal blood sugar levels.	Saya melakukan aktivitas fisik secara teratur untuk mencapai tingkat gula darah yang optimal.
9	I strictly follow the dietary recommendations given by my doctor or diabetes specialist.	Saya secara ketat mengikuti rekomendasi diet yang diberikan oleh dokter saya atau spesialis diabetes.
10	I do not check my blood sugar levels frequently enough as would be required for achieving good blood glucose control. Blood sugar measurement is not required as a part of my treatment.	Saya tidak cukup sering memeriksa kadar/tingkat gula darah saya seperti yang diperlukan untuk mencapai kontrol glukosa darah yang baik. Pengukuran gula darah tidak diperlukan sebagai bagian dari pengobatan/perawatan saya.
11	I avoid physical activity, although it would improve my diabetes.	Saya menghindari aktivitas fisik, walaupun hal tersebut bisa memperbaiki/meningkatkan diabetes saya.
12	I tend to forget to take or skip my diabetes medication (e. g. insulin, tablets). ☐ Diabetes medication / insulin is not required as a part of my treatment.	Saya cenderung lupa atau melewatkan meminum obat diabetes saya (misalnya insulin, tablet-tablet). ☐ Obat diabetes/insulin tidak diperlukan sebagai bagian dari perawatan saya.
13	Sometimes I have real 'food binges' (not triggered by hypoglycaemia).	Terkadang saya memiliki "rasa tidak bisa mengontrol makan" (bukan dipicu oleh hipoglikemia).
14	Regarding my diabetes care, I should see my medical practitioner(s) more often.	Terkait dengan perawatan diabetes saya, saya harus lebih sering bertemu dengan dokter medis saya.
15	I tend to skip planned physical activity.	Saya cenderung untuk melewatkan aktivitas fisik yang sudah direncanakan.
16	My diabetes self-care is poor.	Perawatan diri diabetes saya buruk

3. Stage 3: *Back Translation*

After the second stage has been completed, then back translation by an Indonesian citizen with a nursing educational background who are experts in English and has completed master and doctoral studies abroad. This translator saw the similarity of the instrument from the results of the translation with the original instrument. This was done to provide unbiased results in back translation from DMSQ to English. Stage 3 result showed no change in the meaning of the sentence on each statement in Table 2.

Table 3. *Back Translation*

No	Synthesis results	*Back Translation*
	Pernyataan-pernyataan berikut ini menggambarkan aktivitas-aktivitas perawatan diri yang terkait dengan penyakit diabetes anda. Pikirkan kembali perawatan diri anda selama 8 minggu terakhir, silahkan tentukan sejauh mana setiap pernyataan sesuai dengan kondisi anda.	The following statements describe personal care activities associated with your diabetes. Think about your care over the last 8 weeks. Determine how much each statement reflects your condition.
1	Saya memeriksa kadar gula darah dengan hati-hati dan penuh perhatian. ☐ Pengukuran gula darah tidak diperlukan sebagai bagian dari perawatan saya.	I check my blood sugar level carefully and attentively. ☐ Blood sugar measurements are not needed as part of my personal care.
2	Makanan yang saya pilih untuk dimakan memudahkan saya mencapai kadar gula darah optimal.	The food I choose to eat helps me to reach an optimal blood sugar level.
3	Saya menyimpan semua perjanjian dengan dokter yang direkomendasikan untuk perawatan diabetes saya.	I keep all of my promises to the doctor that are recommended for the treatment of my diabetes.
4	Saya meminum obat diabetes saya (misalnya insulin, tablet) seperti yang ditentukan/resepkan. ☐ Obat diabetes/insulin tidak diperlukan sebagai bagian dari perawatan saya.	I take my diabetes medication (for example insulin, tablets) as prescribed. ; ☐Diabetes medication / insulin is not needed as part of my treatment.
5	Kadang-kadang saya makan banyak makanan manis atau makanan lainnya yang kaya akan karbohidrat.	Sometimes I eat food that is sweet or other food that is rich in carbohydrates.
6	Saya mencatat kadar gula darah saya secara teratur (atau menganalisis nilai pada grafik dengan pengukur glukosa darah saya). ☐ Pengukuran gula darah tidak diperlukan sebagai bagian dari perawatan saya.	I record my blood sugar levels regularly (or analyze the values on the chart with my blood glucose measurements). ☐ Blood sugar measurements are not needed as part of my care.
7	Saya cenderung menghindari perjanjian dengan dokter yang terkait dengan diabetes.	I tend to avoid agreements with doctors concerning diabetes
8	Saya melakukan aktivitas fisik secara teratur untuk mencapai tingkat gula darah yang optimal.	I do physical activity regularly to reach an optimal blood sugar level
9	Saya secara ketat mengikuti rekomendasi diet yang diberikan oleh dokter saya atau spesialis diabetes.	I strictly follow dietary recommendations given by my doctor or diabetes specialist
10	Saya tidak cukup sering memeriksa kadar/tingkat gula darah saya seperti yang diperlukan untuk mencapai kontrol glukosa darah yang baik. ☐ Pengukuran gula darah tidak diperlukan sebagai bagian dari pengobatan/perawatan saya.	I do not check my blood sugar level as often as needed to achieve good blood glucose control. ☐ Blood sugar measurements are not needed as part of my treatment/care.
11	Saya menghindari aktivitas fisik, walaupun hal tersebut bisa memperbaiki/meningkatkan diabetes saya.	I avoid physical activity even though that could improve my diabetes.
12	Saya cenderung lupa atau melewatkan meminum obat diabetes saya (misalnya insulin, tablet-tablet). ☐ Obat diabetes/insulin tidak diperlukan sebagai bagian dari perawatan saya.	I tend to forget or miss taking my diabetes medication (for example insulin, tablets) ☐ Diabetes medication / insulin is not needed as part of my treatment.
13	Terkadang saya memiliki "rasa tidak bisa mengontrol	Sometimes I experience an “inability to control what I eat” (not

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	makan" (bukan dipicu oleh hipoglikemi)	triggered by hypoglycemia)
14	Terkait dengan perawatan diabetes saya, saya harus lebih sering bertemu dengan dokter medis saya	Related to my diabetes care, I need to meet more often with my medical doctor.
15	Saya cenderung untuk melewatkan aktivitas fisik yang sudah direncanakan.	I tend to miss physical activities that I had planned.
16	Perawatan diri diabetes saya buruk	My diabetes care is bad. / My care of my diabetes is bad

After stage 3 is complete, the researcher compares the results of the translation, was to compare translation results with the results of the back-translation. In general, the results of this back translation show differences in diction with the initial version of the DMSQ in English. The statements in the re-translated DMSQ have the same meaning as the original version. This is done to determine the final questionnaire for the Diabetes Self-Management Questionnaire (DSMQ) instrument in the Bahasa version.

Table 4. Final questionnaire

No	Pernyataan-pernyataan berikut ini menggambarkan aktivitas-aktivitas perawatan diri yang terkait dengan penyakit diabetes Anda. Pikirkan kembali perawatan diri Anda selama 8 minggu terakhir, silahkan tentukan sejauh mana setiap pernyataan sesuai dengan kondisi Anda.
1	Saya memeriksa kadar gula darah dengan hati-hati dan penuh perhatian. ☐ Pengukuran gula darah tidak diperlukan sebagai bagian dari perawatan saya.
2	Makanan yang saya pilih untuk dimakan memudahkan saya mencapai kadar gula darah optimal.
3	Saya menyimpan semua perjanjian dengan dokter yang direkomendasikan untuk perawatan diabetes saya.
4	Saya meminum obat diabetes saya (misalnya insulin, tablet) seperti yang ditentukan/resepkan. ☐ Obat diabetes/insulin tidak diperlukan sebagai bagian dari perawatan saya.
5	Kadang-kadang saya makan banyak makanan manis atau makanan lainnya yang kaya akan karbohidrat.
6	Saya mencatat kadar gula darah saya secara teratur (atau menganalisis nilai pada grafik dengan pengukur glukosa darah saya). ☐ Pengukuran gula darah tidak diperlukan sebagai bagian dari perawatan saya.
7	Saya cenderung menghindari perjanjian dengan dokter yang terkait dengan diabetes.
8	Saya melakukan aktivitas fisik secara teratur untuk mencapai tingkat gula darah yang optimal.
9	Saya secara ketat mengikuti rekomendasi diet yang diberikan oleh dokter saya atau spesialis diabetes.
10	Saya tidak cukup sering memeriksa kadar/tingkat gula darah saya seperti yang diperlukan untuk mencapai kontrol glukosa darah yang baik. ☐ Pengukuran gula darah tidak diperlukan sebagai bagian dari pengobatan/perawatan saya.
11	Saya menghindari aktivitas fisik, walaupun hal tersebut bisa memperbaiki/meningkatkan diabetes saya.
12	Saya cenderung lupa atau melewatkan meminum obat diabetes saya (misalnya insulin, tablet-tablet). ☐ Obat diabetes/insulin tidak diperlukan sebagai bagian dari perawatan saya.
13	Terkadang saya memiliki "rasa tidak bisa mengontrol makan" (bukan dipicu oleh hipoglikemi).
14	Terkait dengan perawatan diabetes saya, saya harus lebih sering bertemu dengan dokter medis saya.
15	Saya cenderung untuk melewatkan aktifitas fisik yang sudah direncanakan.
16	Perawatan diri diabetes saya buruk

DISCUSSION

This research aimed to translate the DSMQ so that it can be used in Indonesian speaking population and does not change the meaning of the instrument. The translation process is carried out in three stages, namely the instrument translation process, synthesis, and back translation. In the translation stage, the instrument involved three bilingual experts who had bilingual skills, namely fluency in English and Indonesian with a background as nurses. Instrument translation aims to involve bilingual experts so that the translated instrument can be understood from both sides of the language and does not change the meaning of the original instrument language (Ayala & Calvo, 2017; Borsa, 2012; Laborería-Romances et al., 2023)

Based on the translation results of the Diabetes Self-Management Questionnaire (DSMQ) instrument statements from 3 bilingual experts, translation results were obtained that had the same meaning even though there were differences in the

words in the translation from the 3 expert translators. It can be concluded that the translation results from the 3 experts meet the criteria for the next process, namely the instrument synthesis process.

The instrument synthesis process involved one expert with a nursing background. In this process, the expert summarizes the translation results and makes a conclusion statement in standard Indonesian and easy to understand for the target population, namely people with diabetes mellitus type 2. Of the 16 statements synthesized. Experts only correct sentence structures and language without changing the meaning of the original translated instrument.

The synthesis process is the process of comparing the translation results of bilingual experts in terms of semantic equality, namely whether the word terms of the translation results have the same meaning, whether there are grammatical difficulties that are difficult to understand; and idiomatic equality, namely assessing whether the language used is difficult to understand and experts must formulate it in simple language which has the same meaning as the original version of the instrument. The synthesis process aims to reach a consensus on the translation results from three experts(Ayala & Calvo, 2017; Borsa, 2012; Maneesriwongul, 2004)

The third stage of the translation process is back translation, in this process, the instrument is translated back into the language of the original instrument to assess whether there is a change in the meaning of the original instrument and as a quality control whether the translated version of the instrument can reflect the content of the questions contained in the original version of the instrument (Ayala & Calvo, 2017; Borsa, 2012; Li et al., 2022) Back translation was carried out by a bilingual expert with a nursing background. Of the 16 statements that went through the back translation process, in general, there was no significant change in meaning and only a few statements had changes in words and grammar from the original version of the instrument but did not change the meaning.

Based on the results of the translation, synthesis, and back translation processes, it can be concluded that the 16 statement items in the instrument have the same meaning as the original version of the instrument, therefore the translated instrument is said to be suitable for application to the target population, especially people with diabetes mellitus type 2.

CONCLUSION

The Diabetes Self-Management Questionnaire (DSMQ) instrument has gone through a translation process, synthesis, and back-translation method that produces a good translation. Therefore, to follow up on this study, researchers recommend conducting validity and reliability tests to determine the feasibility of instruments in assessing and seeing the ability of diabetes mellitus patients to conduct self-care.

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REFERENCE

Alligood, M. R. (2014). Nursing Theorists and Their Work (8th edn). In *Nursing Theorists and Their Work (8th edn)*. https://doi.org/10.5172/conu.2007.24.1.106a

American Diabetes Association. (2018). Standards of Medical Care in. *The Journal of Clinical and Applied Research and Education*, *38*(January 2015), Supplement 1. https://doi.org/10.2337/dc13-S011

Ayala, R. A., & Calvo, M. J. (2017). Cultural adaptation and validation of the Caring Behaviors Assessment tool in Chile. *Nursing and Health Sciences*, *19*(4), 459–466. https://doi.org/10.1111/nhs.12364

Borsa, J. C. (2012). Cross-Cultural Adaptation and Validation of Psychological Instruments : Adaptação e Validação de Instrumentos Psicológicos entre Culturas : Algumas Considerações Adaptación y Validación de Instrumentos Psicológicos entre Culturas : Algunas Consideraciones. *Paidéia*, *22*(53), 423–432. www.scielo.br/pdf/paideia/v22n53/en_14.pdf

Fransen, M. P. et al. (2011). Applicability of internationally available health literacy measures in the Netherlands. Journal of Health Communication. 134–149. doi: 10.1080/10810730.2011.604383.

Hidayat, W., Najamuddin, N. I., & Patmawati, T. A. (2020). Translasi Kuesioner Evidence-Based Practice Implementation (EBPI) dengan Metode Back-Translation. *Profesi (Profesional Islam) : Media Publikasi Penelitian*, *18*(1), 33–41. https://doi.org/10.26576/profesi.v18i1.44

Igland, J., Potrebny, T., Bendixen, B. E., Haugstvedt, A., Espehaug, B., Titlestad, K. B., & Graverholt, B. (2021). Translation and validation of the Alberta Context Tool for use in Norwegian nursing homes. *PLoS ONE*, *16*(10 October), 1–17. https://doi.org/10.1371/journal.pone.0258099

Indriartiningtias, R., Subagyo, & Hartono, B. (2018). PROSES TRANSLASI RANCANGAN KUESIONER

KREATIVITAS ORGANISASI DENGAN METODE BACK-TRANSLATION. *Seminar Nasional IENACO*.

Laborería-Romances, A., Navas-Ferrer, C., Anguas-Gracia, A., Callén-Galindo, M., Antón-Solanas, I., & Urcola-Pardo, F. (2023). Translation, Cultural Adaptation and Validation of the Nurses Self-Concept Instrument (NSCI) to Spanish. *International Journal of Environmental Research and Public Health*, *20*(2). https://doi.org/10.3390/ijerph20021529

Li, P., Wang, Y., & Zhang, M. (2022). Translation and validation of the Work-Related Quality of Life Scale (WRQoLS-2) in a nursing cohort. *Contemporary Nurse*, *58*(5–6), 435–445. https://doi.org/10.1080/10376178.2022.2147849

Maneesriwongul, W. (2004). Instrument Translation Process: A Methods Review. *Archives of Otolaryngology--Head and Neck Surgery*, *113*(4), 437. https://doi.org/10.1001/archotol.1987.01860040098030

Orem. (2001). *Nursing: Concepts of practice* (6th ed.).

Safila, I. (2015). *HUBUNGAN ANTARA TINGKAT LITERASI KESEHATAN DENGAN DIABETES AKTIVITAS DIRI PERLINDUNGAN PADA PASIEN DIABETES MELITUS TIPE 2 DI KABUPATEN SLEMAN*. Universitas Gadjah Mada.

Schmitt, A., Gahr, A., Hermanns, N., Kulzer, B., Huber, J., & Haak, T. (2013). The Diabetes Self-Management Questionnaire (DSMQ): Development and evaluation of an instrument to assess diabetes self-care activities associated with glycaemic control. *Health and Quality of Life Outcomes*, *11*(1), 1. https://doi.org/10.1186/1477-7525-11-138

Sousa, E., Lin, C. F., Gaspar, F., & Lucas, P. (2022). Translation and Validation of the Indicators of Quality Nursing Work Environments in the Portuguese Cultural Context. *International Journal of Environmental Research and Public Health*, *19*(19). https://doi.org/10.3390/ijerph191912313

Tewahido, D., & Berhane, Y. (2017). Self-care practices among diabetes patients in Addis Ababa: A qualitative study. *PLoS ONE*, *12*(1), 1–10. https://doi.org/10.1371/journal.pone.0169062