Original Article

Danish translation and linguistic validation of a self-efficacy questionnaire

Mille Guldager Christiansen[1*], Trine Lund-Jacobsen[2*], Mary Jarden[3, 4], Helle Pappot[1, 4] & Karin Piil[1, 5]

1) Department of Oncology, Center for Cancer and Organ Diseases, Copenhagen University Hospital – Rigshospitalet, 2) Department of Endocrinology, Center for Cancer and Organ Diseases, Copenhagen University Hospital – Rigshospitalet, 3) Department of Haematology, Center for Cancer and Organ Diseases, Copenhagen University Hospital – Rigshospitalet, 4) Department of Clinical Medicine, University of Copenhagen, 5) Department of Public Health, University of Aarhus, Denmark

ABSTRACT

INTRODUCTION. The Self-Efficacy for Managing Chronic Disease 6-item Scale is a widely used questionnaire instrument for measuring self-efficacy. Since self-efficacy has increasingly been recognised as an essential prerequisite for effective self-management of chronic diseases, valid and reliable measures are needed to do evaluations in research and clinical practice. This study aimed to translate and perform linguistic validation of the questionnaire for use in a Danish population and context.

METHODS. The translation and validation process, which followed the International Society for Pharmacoeconomics and Outcome Research guidelines, included professional translation and back translation, facilitated by clinical experts. Furthermore, we conducted cognitive debriefing interviews with patients diagnosed with chronic diseases.

RESULTS. The questionnaire was translated into Danish and linguistically validated, each step producing changes leading to a more conceptually and culturally equivalent Danish version. The back translation was compared with the original English version which led to the identification of discrepancies requiring discussion before the next back translation. Ten participants were recruited for the cognitive debriefing interviews and contributed to minor changes.

CONCLUSION. The Danish version of the Self-Efficacy for Managing Chronic Disease 6-item Scale is ready for use among Danish-speaking patients with chronic diseases.

FUNDING. This work was supported by the Models of Cancer Care Research Program with grants from the Novo Nordisk Foundation (NNF16OC0022338) and Minister Erna Hamilton's Grant for Science and Art, (06-2019). The funding source did not contribute to the study.

TRIAL REGISTRATION. not relevant.

In recent years, patient-reported outcome measures (PROMs) have received increased attention with patients self-reporting health-related issues such as symptoms, physical function, general well-being and health-related quality of life [1]. PROMs data may be used to inform health technology assessment, health policy and service improvement in addition to facilitating patient-provider communication [2]. Patient self-management of chronic disease is an important prerequisite to improving health behaviours, health outcomes and quality of life [3].

The increasing incidence of patients with chronic diseases calls for improved monitoring of self-efficacy that involves ways to strengthen patient empowerment strategies [3]. Bandura defines self-efficacy as the level of confidence that an individual has in being able to perform a specific task successfully [4]. The individual's

perception of their own self-efficacy in terms of the task influences their motivation to keep going and aim for specific results [5]. Patients with a higher self-efficacy are more likely to start or maintain a specific task even when barriers exist [5].

Hence, valid and reliable self-efficacy instruments for performing and evaluating self-management interventions in chronic care are warranted [6]. The Self-Efficacy for Managing Chronic Disease 6-item Scale (SES6G) covers common domains found in many chronic diseases: symptom control, role function, emotional functioning and communication with physicians [7]. Until now, the SES6G had never been translated into Danish. Hence, the objective of this study was to translate and perform linguistic validation of the Danish version of the SES6G.

METHODS

This was a translation and validation study employing face-to-face, semi-structured cognitive debriefing interviews.

The Self-Efficacy for Managing Chronic Disease 6-item Scale

The SES6G consists of six items rated on a ten-point Likert scale, ranging from not at all confident (score 1) to totally confident (score 10) [7]. The mean score of the six items represents the total self-efficacy score [7]. Higher scores reflect higher levels of self-efficacy, whereas lower scores reflect the opposite [7].

Setting and participants

For the interviews, which were held in February and March 2021, participants were recruited purposefully to achieve maximum variation across age (19-71 years old) and sex. We used convenience sampling [8] and, following Malterud [9], the sample size was guided by information power. Participants were eligible if they were ≥ 18 years of age, diagnosed with at least one chronic disease and were able to speak and understand Danish. Participants with severe cognitive impairment or severe psychiatric disease were ineligible due to the think-aloud approach [10] adopted in the cognitive interviews, as this approach requires remembering, concentration and reflection. The interviews took place in a quiet room, according to participant preferences and only the participant and the interviewer were present.

The translation process

The linguistic validation followed good practice principles for translation and cultural adaption found in the International Society for Pharmacoeconomics and Outcome Research (ISPOR) guidelines [11], which contain a ten-step approach, from preparation to the final report, that we adhered to and describe below [11]. **Figure 1** contains a flowchart of the translation and validation process.

FIGURE 1 Flow chart summarising the translation and validation process.
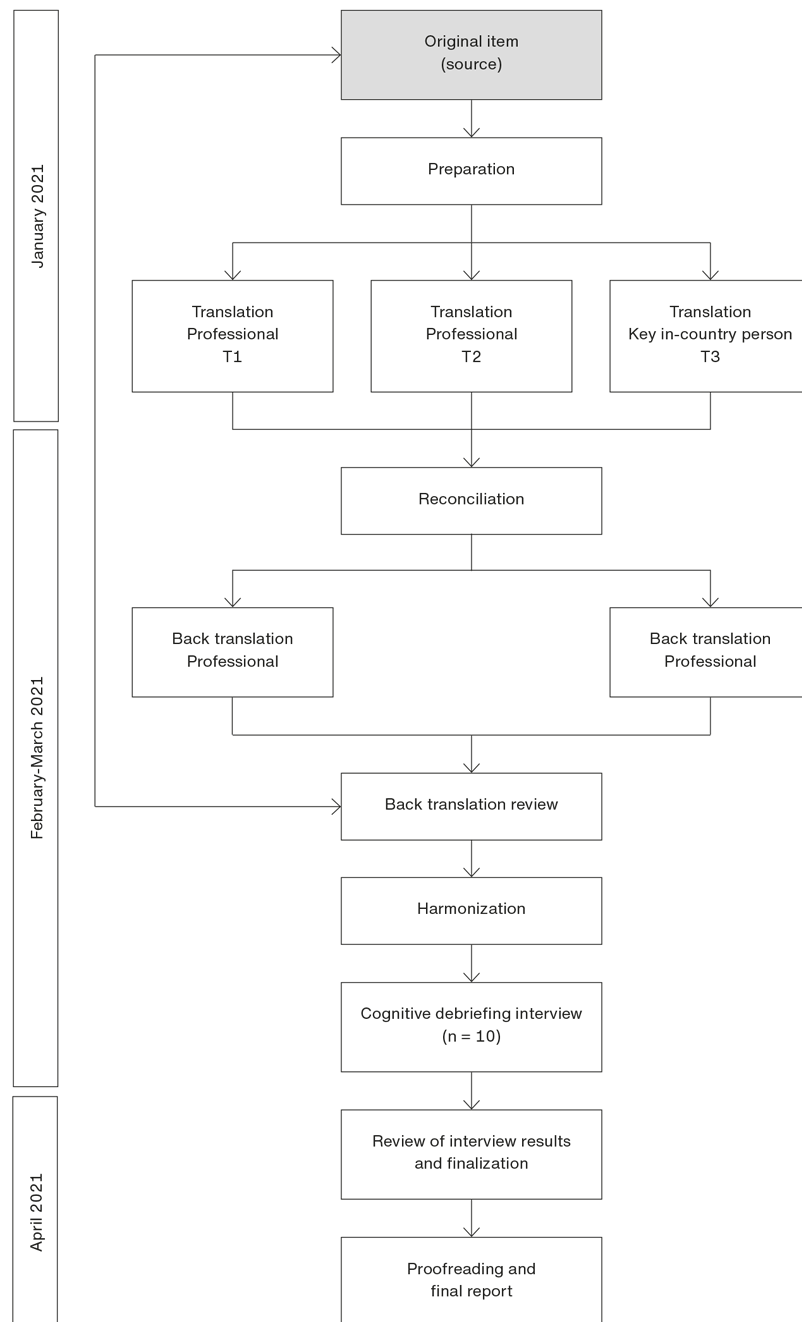
T1 = translator 1; T2 = translator 2; T3 = translator 3.

Step 1: Preparation

The translation and validation process was supervised by a group of clinical experts comprising two PhD students (MGC, TLJ), a senior oncologist and professor in patient-reported outcome and patient involvement (HP), and a professor (MJ) and an associate professor (KP) specialising in nursing, symptom science and health-related quality of life.

Step 2: Translation

The SES6G was translated from English into Danish by two professional translators with experience translating questionnaires who were native Danish speakers. The key in-country person (KP) with experience translating PROMs also translated the questionnaire. This step produced three versions of the SES6G that differed slightly in terms of diction and syntax. A Likert scale ranging from not at all confident to totally confident was translated as a key component of the questionnaire. Because the translations were consistent and required no further adjustments, the first version of the Likert scale was used.

Step 3: Reconciliation

The expert group discussed the three translations and agreed on a reconciled version, which involved a stepwise process for each item that included discussing any discrepancies, words and phrasing until an agreement was reached as to the most suitable translation.

Steps 4 and 5: Back translation and review of back translation

Two additional professional translators who were native speakers of English and bilingual in Danish conducted the back translation (Danish into English) of the reconciled version. The translators aimed to create a conceptual translation rather than a literal one. The original English version of the SES6G was blinded to the two translators. The expert group then discussed the English back translations and compared them to the original version to examine any discrepancies.

Step 6: Harmonization

The back translations from Danish into English were compared to the back translation from multiple other languages to highlight discrepancies between the original and its various translations, and to achieve a consistent approach to any translation issues. Following discussion and revision, the expert group reached a consensus on the revised Danish version to use in the cognitive debriefing interviews.

Step 7: Cognitive debriefing

The two first authors (MGC, TLJ), who are experienced in qualitative research, conducted the cognitive debriefing interviews and subsequently took notes to document their reflections. Participants received information about the purpose of the study. The participants were introduced to the think-aloud procedure [10] at the beginning of the interview and were encouraged to express their thoughts and considerations when answering the items. A manual with a structured interview guide was prepared to ensure that interviewers facilitated the cognitive debriefing systematically and as identically as possible (https://www2.ugeskriftet.dk/files/a12210949_-_supplementary.pdf **Supplementary material**). The interviewer asked participants questions to determine if they had difficulty comprehending the questionnaire and verified their interpretation of every item, as well as the instructions and time frame. The interviewer also questioned the participant's comprehension of the Likert scale.

Steps 8, 9 and 10: Review of cognitive debriefing results, proofreading and final report

To review the results of the cognitive debriefing interviews, the expert group compared and discussed participant interpretations of the Danish translation with the original English version to highlight and amend discrepancies. It was discussed whether introductions and explanations should be added as minor adjustments, but these were not included in the final version to ensure its consistency with the original version.

Two key in-country individuals, MCG and TLJ, conducted the final revision to ensure that the translation was suitable and correct typographically and grammatically. Finalization led to minor changes in grammar, producing the final linguistically validated and equivalent Danish version of the SES6G. **Table 1** summarises the

translation process.

Ethics

This study was conducted in accordance with the Declaration of Helsinki and registered with the Danish Data Protection Agency (P-2021-179). Professor Kate Lorig, Standford University School of Medicine, USA, who developed the SES6G, gave permission to use the questionnaire without a licensing agreement or payment. Prior to the cognitive debriefing interviews, the participants provided written informed consent.

Trial registration: not relevant.

TABLE 1 The translation process.

Item	Original English version [7]	Translation	Final version
1	How confident do you feel that you can keep the fatigue caused by your disease from interfering with the things you want to do?	T1: Hvor sikker er du på, at du kan forhindre, at den træthed, som du oplever grundet din sygdom, bryder forstyrrende ind i de ting, du har lyst til at foretage dig? T2: Hvor sikker føler du dig på, at du kan afholde din sygdomsrelaterede træthed fra at påvirke dine muligheder for at udføre de handlinger, som du godt kunne tænke dig at udføre? T3: Hvor sikker føler du selv dig på, at du kan undgå at trætheden forhindrer dig i de ting du gerne vil?	Hvor sikker føler du dig på, at du kan undgå at træthed som følge af din sygdom, forstyrrer dig i de ting du gerne vil gøre?
2	How confident do you feel that you can keep the physical discomfort or pain of your disease from interfering with the things you want to do?	T1: Hvor sikker er du på, at du kan forhindre, at det fysiske ubehag eller smerterne, som du oplever grundet din sygdom, bryder forstyrrende ind i de ting, du har lyst til at foretage dig? T2: Hvor sikker føler du dig på, at du kan afholde det fysiske ubehag eller den smerte som du oplever i forbindelse med din sygdom fra at påvirke dine muligheder for at udføre de handlinger, som du godt kunne tænke dig at udføre? T:3: Hvor sikker føler du dig selv på, at du kan undgå at det fysiske ubehag eller smerter forhindrer dig i de ting du gerne vil?	Hvor sikker føler du dig på, at du kan undgå at fysisk ubehag eller smerter som følge af din sygdom, forstyrrer dig i de ting du gerne vil gøre?
3	How confident do you feel that you can keep the emotional distress caused by your disease from interfering with the things you want to do?	T1: Hvor sikker er du på, at du kan forhindre, at de emotionelle problemer, som du oplever grundet din sygdom, bryder forstyrrende ind i de ting, du har lyst til at foretage dig? T2: Hvor sikker føler du dig på, at du kan afholde de følelsesmæssige problemer som du oplever i forbindelse med din sygdom fra at påvirke dine muligheder for at udføre de handlinger, som du godt kunne tænke dig at udføre? T3: Hvor sikker føler du dig selv på, at du kan undgå at den følelsesmæssige belastning forhindrer dig i de ting du gerne vil?	Hvor sikker føler du dig på, at du kan undgå at den følelsesmæssige belastning som følge af din sygdom, forstyrrer dig i de ting du gerne vil gøre?
4	How confident do you feel that you can keep any other symptoms or health problems you have from interfering with the things you want to do?	T1: Hvor sikker er du på, at du kan forhindre, at andre symptomer eller helbredsproblemer, du måtte have, bryder forstyrrende ind i de ting, du har lyst til at foretage dig? T2: Hvor sikker føler du dig på, at du kan afholde andre symptomer eller helbredsproblemer fra at påvirke dine muligheder for at udføre de handlinger, som du godt kunne tænke dig at udføre? T3: Hvor sikker føler dig selv på, at du kan undgå at andre symptomer eller helbredsproblemer forhindrer dig i de ting du gerne vil?	Hvor sikker føler du dig på, at du kan undgå at andre symptomer eller helbredsproblemer (du måtte have), forstyrrer dig i de ting du gerne vil gøre?
5	How confident do you feel that you can do the different tasks and activities needed to manage your health condition so as to reduce your need to see a doctor?	T1: Hvor sikker er du på, at du kan udføre de forskellige opgaver og aktiviteter, der er nødvendige for at kunne håndtere din helbredstilstand, så behovet for at søge læge reduceres? T2: Hvor sikker føler du dig på, at du kan administrere de opgaver og aktiviteter som er nødvendige at udføre for at begrænse dit behov for lægetilsyn? T3: Hvor sikker føler du dig selv på, at du klare de opgaver og aktiviteter, der er nødvendige for at håndtere din helbredstilstand, så du kan mindske dit behov for at se en læge?	Hvor sikker føler du dig på, at du kan gøre de forskellige opgaver og aktiviteter der er nødvendige for at håndtere din helbredstilstand, så dit behov for at se en læge mindskes?
6	How confident do you feel that you can do things other than just taking medication to reduce how much your illness affects your everyday life?	T1: Hvor sikker er du på, at du kan gøre andre ting end blot at tage medicin for at reducere, hvor meget din sygdom påvirker din hverdag? T2: Hvor sikker føler du dig på, at du udover indtag af medicin kan udføre handlinger som har til formål at reducere din sygdoms indflydelse på din hverdag? T3: Hvor sikker føler dig du selv på, at du kan gøre andre ting, end blot at tage medicin, for at mindske hvor meget sygdommen påvirker din hverdag?	Hvor sikker føler du dig på, at du kan gøre andre ting end blot at tage medicin for at mindske, hvor meget din sygdom påvirker din hverdag?

T1 = translator 1; T2 = translator 2; T3 = translator 3.

RESULTS

Translation and back translation

The comparison of the back translation of the Danish version and the original English version showed that some sentences were difficult to translate into Danish. For example, the original item "… caused by your disease from interfering with things you …" was initially back translated as "… resulting from your illness disturbing you in doing …." The two versions of the back translation were nonetheless sufficiently similar. Items 3 and 5 were identified as problematic due to the difficulty of directly translating "emotional distress" and "see a doctor" into Danish, while translating "medication" into Danish in item 6 was also a challenge.

Cognitive debriefing

Eleven participants were eligible for participation. One declined due to a lack of motivation, leaving ten participants diagnosed with various chronic diseases. **Table 2** summarises participant characteristics.

TABLE 2 Characteristics of patients with chronic disease (N = 10).

	n	Years
Sex		
Male/female	5/5	
Age, average (range)		46.5 (19-71)
Diagnosis		
Metabolic disease	3	
Cardiovascular disease	3	
Abdominal disease	1	
Muscle, joint, connective tissue disease	3	
Highest completed education		
Primary school	1	
Short: < 3 years	0	
Medium	3	
Higher	6	

MGC and TLJ conducted the face-to-face semi-structured interviews, which lasted 17-31 minutes (22 on average). The researchers encouraged a think-aloud approach [10] and asked probing questions [12]. Participants were asked to read the Danish version of the SES6G to identify any items, instructions or response options that they felt were poorly worded and to propose alternative phrasing. Participants were requested to think aloud while reading and answering the questions. Their responses produced minor adjustments before settling on the final Danish version.

The interviews showed that the Danish version was understandable and that the participants were able to explain the terms used. The interviewers specifically asked participants to interpret and demonstrate their understanding of the following Danish terms and phrases used: emotional distress, keep, interfering with, medication, and need to see a doctor. Some pointed out that "emotional distress" as translated into Danish could be improved by writing "any emotional distress." The expert group decided not to change this and instead used the original English term "the emotional distress." Participants thought items may be challenging to read since they were so lengthy, but they were unable to suggest any changes to make them easier to understand. Overall, however, participants found that the questionnaire and the Likert scale were relevant and easily understood.

DISCUSSION

This study aimed to translate and perform a linguistic validation of the SES6G for use in a Danish population and context. In general, the Danish version was comparable to the original, with only minor changes in grammar. Despite this, the patients found that the items were challenging, due primarily to the parenthetical sentences, which may be easily read in English but potentially difficult to read in Danish. Due to the uniformity of the original English questionnaire, changing the structure of the items was not possible because it would significantly change the meaning. However, because the participants understood the items sufficiently and were unable to suggest any improvements, it was decided to be consistent with the original questionnaire.

Systematic use of the evidence-based ISPOR guidelines [11] directed the translation process from preparation to finalization of the Danish translation. The cognitive debriefing interviews helped determine whether the correct Danish diction and syntax were used, and to ensure that the wording was generally understood.

With a growing number of people living with chronic diseases [13, 14], assessment of self-efficacy is of increasing importance since it can help indicate the level of a patient's capacity to act or use self-management techniques [15]. Valid questionnaires like the SES6G may be used in research when comparing results nationally and internationally and in clinical practice as an evaluation measure. Recently, various international studies [16, 17] have used the SES6G as an outcome measure.

Strengths and limitations

The participants in this study had various chronic diseases, which is a strength, as is the number of participants, age range and sex balance. It would have strengthened the generalisability if more participants with lower levels of education and comorbidity had participated. Furthermore, it is a limitation that the Danish version of the SES6G was not pilot-tested, even though this is not required by the ISPOR guideline [11]. The Danish SES6G is currently being tested in a Danish population and further testing of its usefulness and readability is recommended. However, the rich and detailed information and respondent validation during the cognitive debriefing is a strength. Furthermore, it is a strength that this work was conducted in accordance with the ISPOR guidelines; the gold standard for translation and validation of questionnaires.

The composition of the expert group, with its range of skills and qualifications, facilitated informative discussions and aided critical reflection throughout the process. Although inviting patients with chronic diseases to facilitate and discuss the findings may also have been beneficial, however, the large number of cognitive interviews allowed us to capture patient reflections and experiences, which is important to the questionnaire's applicability.

CONCLUSION

This study achieved its aims by translating the SES6G into Danish and then validating the Danish version. Based on the cognitive debriefing interviews, the scale is perceived as brief, easy to complete and is relevant in terms of measuring self-efficacy for chronic disease in a Danish population and context. The systematic use of ISPOR guidelines was valuable for achieving a conceptually and culturally valid Danish translation. Finally, additional research to further establish the psychometric properties of the questionnaire is recommended.

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