Linguistic Validation and Cross-Cultural Adaptation of the Post–COVID-19 Functional Status Scale for the Chilean Population

Luz Alejandra Lorca, PT, MSc, Rodrigo Torres-Castro, PT, MSc, Ivana Leao Ribeiro, PT, PhD, Paulina Benavente, PT, MSc, Marta Pizarro, PT, Belgica San Cristobal, OT, Javiera Ugarte, PT, Cristobal Laura, PT, Camila Huanchicay, PT, and Alexandra Mamani, PT

Background: Patients with COVID-19 can present functional status and disability alterations in the medium- and long-term. On the international level, a multicentered study is being carried out to validate the Post–COVID-19 Functional Status scale for different nations, thus allowing visualizing the needs for a multidisciplinary approach and planning intervention plans. The objective of this study was to perform a linguistic validation and cross-cultural adaptation of the Post–COVID-19 Functional Status scale for people infected with COVID-19 for the Chilean population.

Methods: A cross-sectional study of scale validation was carried out. The study was performed in two phases: (1) forward-translation, reverse-translation and (2) apparent cross-validity adaptation. For the apparent validity analysis, 29 individuals who had been hospitalized in Hospital del Salvador with a COVID-19 infection diagnosis and at the time of the interview were in their homes participated.

Results: In phase 1 forward-translation, an item required semantical changes. The reverse-translation versions were similar, and the most relevant doubts were resolved in a consensus meeting. In phase 2, the pilot study confirmed adequate understanding and scale applicability.

Conclusions: Using a systematic and rigorous methodology allowed obtaining a Spanish version of the Post–COVID-19 Functional Status scale for Chile, which is conceptually and linguistically equivalent to the original instrument and adequate to assess the functional status of people infected with COVID-19.

Key Words: Translation, Cross-Cultural Adaptation, Questionnaires, COVID-19, Functional Status

(*Am J Phys Med Rehabil* 2021;100:313–320)

What Is Known

- Given the heterogeneity of the clinical presentation of COVID-19 infection, it is essential to have evaluation instruments that allow controlling the course of symptoms and the impact it can have on the functional status of people over time.
- The English version of the Post–COVID-19 Functional Status scale assesses functional consequences and determines the degree of disability of patients.

What Is New

- The Spanish version of the Post–COVID-19 Functional Status scale was conceptually and linguistically equivalent to the original instrument and able to standardize the functional status assessment in the Chilean population.

In December 2019, in Wuhan, China, a pneumonia cluster of unknown etiology[1] was identified. In March, a global pandemic of a new highly contagious disease called COVID-19 resulting from coronavirus (severe acute respiratory syndrome-Cov-2) infection was declared.[2] COVID-19 has become a global public health problem, with approximately 20% of patients infected requiring hospitalization and 6% in critical care and needing invasive ventilatory assistance.[3] Early epidemiologic reports showed that close to 8% of the total cases presented rapid and progressive respiratory failure, similar to acute respiratory distress syndrome, and that its treatment methods range from mechanical ventilation to extracorporeal membrane oxygenation.[4]

Muscle weakness is one of the most frequent sequelae in the intensive care unit (ICU) and is often generated because of critical conditions that pose a vital risk. ICU-acquired weakness is one factor related to muscle weakness, with a prevalence of close to 40% in people who survive a critical illness.[5] Literature has shown that ICU survivors experience marked disability and deficiencies in physical and cognitive functions that may persist for years after their initial ICU stay.[6] Thus, survivors have physical and psychologic long-term sequelae affecting their quality of life for up to 5 yrs from the time of their critical illness—48% of patients do not return to work 1-yr postdischarge, and 32% of patients die within 5 years.[7]

Surviving older adults have limited daily life activities, reaching more significant limitations in basic daily life activities such as walking or bathing.[8] Disability in daily life activities is associated with more substantial healthcare expenditures, more hospitalizations, increased risk of institutionalization, and higher mortality rates.[6]

From the Hospital del Salvador, Servicio de Salud Metropolitano Oriente, Santiago de Chile (LAL, PB, MP, BSC, JU, CL, CH, AM); Departamento de Kinesiología, Facultad de Medicina, Universidad de Chile, Santiago de Chile (RT-C); and Departamento de Kinesiología, Facultad de Ciencias de la Salud, Universidad Católica del Maule, Talca, Chile (ILR).

All correspondence should be addressed to: Luz Alejandra Lorca, PT, MSc, Hospital del Salvador, Servicio de Salud Metropolitano Oriente, Av. Salvador 364, Providencia, 13123, Santiago de Chile.

Financial disclosure statements have been obtained, and no conflicts of interest have been reported by the authors or by any individuals in control of the content of this article.

Supplemental digital content is available for this article. Direct URL citations appear in the printed text and are provided in the HTML and PDF versions of this article on the journal's Web site (www.ajpmr.com).

ISSN: 0894-9115

DOI: 10.1097/PHM.0000000000001706

The recent COVID-19 experience has revealed the need for a rehabilitation approach, especially for those patients with severe diseases.[9] Because of the high prevalence, together with the sequelae, it is necessary to evaluate these patients with objective tools to establish realistic aims and determine the best intervention for each of them.[10,11]

So far, few studies have performed functional capacity evaluations. Amat-Santos et al.[12] used the Barthel index to assess functional capacity in 11 patients who participated in a pharmacologic intervention. Likewise, Liu et al.[13] used the Functional Independence Measure to evaluate a respiratory rehabilitation program's effect in 36 post-COVID-19 infected subjects. Although both instruments were designed to evaluate functional capacity, the psychometric assessment of these scales has not been verified, mainly after the short evolution of the pandemic and because the studies' objective was to evaluate one of the drugs for interventions and another for respiratory rehabilitation.[12,13]

A new functional assessment scale was recently proposed, the Post–COVID-19 Functional Status (PCFS) scale, which could be used for patient follow-up after the infection. This scale assesses functional limitations upon discharge from the hospital, 4 and 8 wks postdischarge to monitor direct recovery, and at 6 mos to assess functional consequences and determine the degree of disability that these patients may have. The PCFS scale is an ordinal scale focusing on relevant aspects of daily life to capture the heterogeneity of post-COVID-19 outcomes. Patients are ranked in meaningful categories that can be used to track improvement over time and help define the therapy's effectiveness on post-COVID-19 functional outcomes, whether or not as a result of the specific infection.[14]

The large number of patients with acute respiratory distress syndrome at risk of developing long-term consequences, who will need trained and prepared multidisciplinary rehabilitation teams, forces the development of and verification that the assessment tools that are used are the most appropriate, thus allowing for the implantation of best practices to improve the functionality and long-term quality of life of these patients.[15]

This study aims to carry out a linguistic and cross-cultural validation of the PCFS scale for the Chilean population.

METHODS

Study Design

A cross-sectional study of the validation scale was carried out. This study conforms to all the Strengthening the Reporting of Observational Studies in Epidemiology guidelines and reports the required information accordingly (see Supplemental Checklist, Supplemental Digital Content 1, http://links.lww.com/PHM/B217).[16]

Setting and Participants

The target population was adults who had been hospitalized for COVID-19. For the analysis of apparent validity, 29 adults who were hospitalized in various departments of a hospital in Santiago and were Chileans, had a full understanding of Spanish, and were at home at the time of the interview participated. The selection was directed to a representative sample in sociodemographic and clinical terms. Those patients who had been referred to hospice care or patients in the terminal stage were excluded.

Instruments

Post–COVID-19 Functional Status Scale

This scale, recently created by Klok et al. (2020),[14] was elaborated for the follow-up of patients after having COVID-19. It focuses on relevant aspects of daily life, seeking the consent of patients who have or had COVID-19. This scale seeks to establish the consequences of the infection on functional status, thus allowing for a more objective way to establish therapies that focus on functional and respiratory rehabilitation.[17]

Items correspond to an ordinal scale that has six steps ranging from 0 (without symptoms) to 5 (death, D) and covering the entire range of functional results focused on limitations of common task/activities, either at home or at work/school, as well as lifestyle changes.

The scale scores are intuitive and can be easily understood by both doctors and patients. The scale can be applied through an interview by a physician or other health professionals previously trained or self-administered by the patient. For this study, the structured interview was used as recommended by its authors.[14]

A registry table was also used for the sociodemographic and clinical background extracted from the clinical records. The background information was recorded, such as age, sex, education, marital status, weight and height, comorbidities, days of hospitalization, stay in ICU, to name a few.

Procedure

For this study, the translation of the PCFS scale included converting from the original English version (PCFS scale, patient self-reporting questionnaire, structured interview) made available by the original authors.[14]

For the translation and cross-cultural adaptation of the instrument, the guide proposed by the World Health Organization and authors such as Sousa and Rojjanasrirat[18–20] were used.

The process was carried out in two phases (Fig. 1).

Phase 1

Forward Translation

In the first phase, two independent translations of the original English version of the PCFS scale were done. Two health professionals performed these translations; both were physiotherapists with a master's degree, were native Spanish speakers (Chile), and spoke English as a second language.

The first expert translator had knowledge of the scale and knew the theoretical construction of the questionnaire and its terminology; the second translator with knowledge of healthcare terminology was also familiar with colloquial phrases, idioms, and idiomatic expressions in English. As a result of the first phase, two versions of the original PCFS scale translated into Spanish were obtained.

A third expert, a professional physiotherapist with a master's degree and experience in scale construction and validation, studied the entire scale development process in-depth and maintained contact and communication with the original authors, who resolved doubts and guided the process. This professional collected and compared both translated versions.

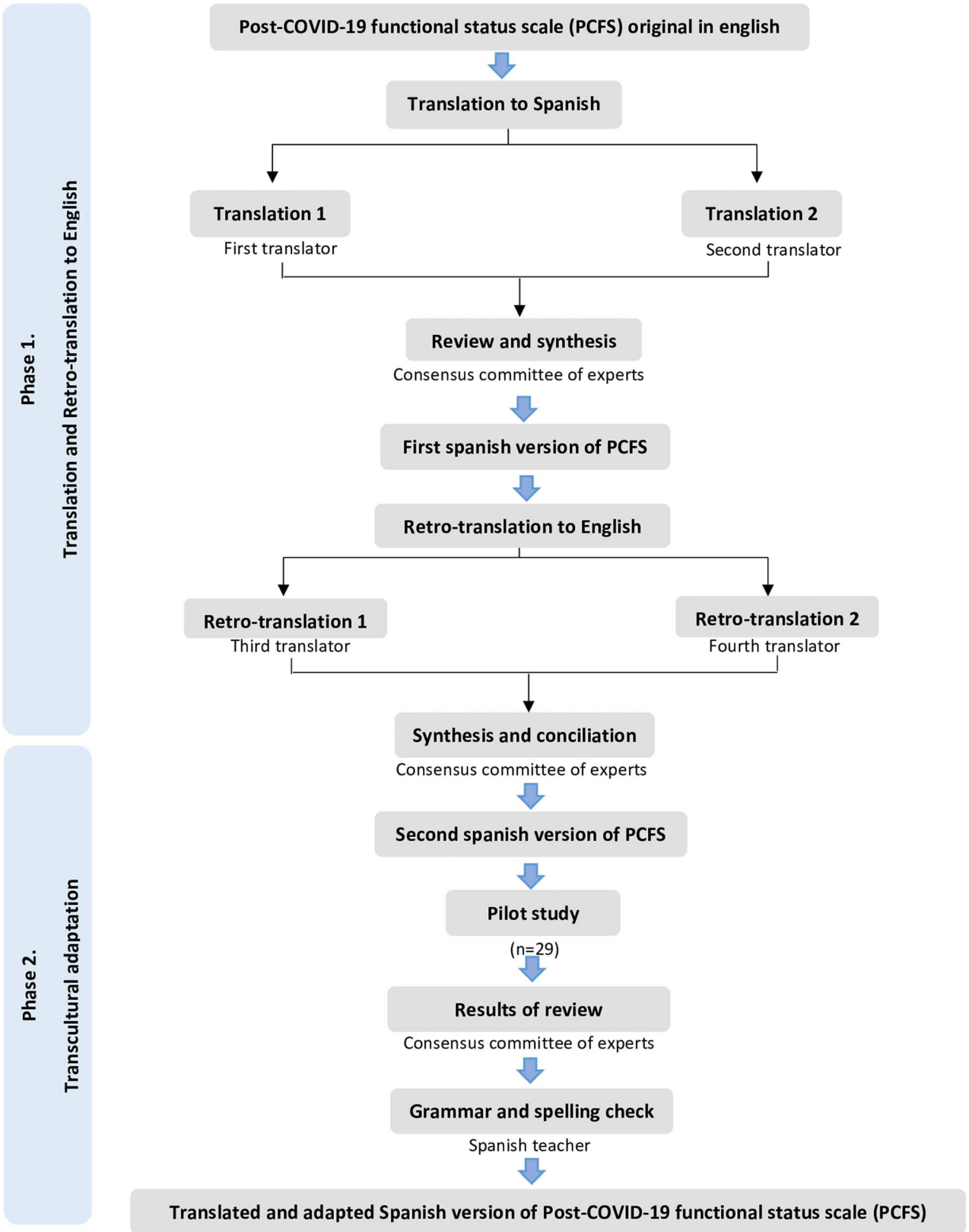

FIGURE 1. Phases of the linguistic validation and cross-cultural adaptation process of the PCFS scale.

Afterward, in a consensus meeting, an expert committee, made up of the translators and authors of this investigation, compared the translated versions, analyzed and discussed loopholes, discrepancies in words, phrases, or existing meanings, and developed the first Spanish version of the scale (Fig. 1).

Back-Translation

In the second stage, a third and fourth translator performed a back-translation into English of the first version of the scale developed in the first stage. The first translator, whose native language was English, was from the United States and spoke Spanish as a second language and was a professional language teacher (English-Spanish) with a master's degree in education and extensive experience in management, translation, and adaptation of instruments.

The second translator was also a US native whose native language is English and who spoke Spanish as a second language, with international translations experience. From the two versions subjected to back-translation, a single version was obtained, which, in a consensus meeting of experts, was compared and evaluated in terms of similarities and conceptual equivalence with the consensus version obtained in phase 1 and in parallel with the original PCFS scale. Finally, in the consensus meeting of experts, a second version of the Spanish scale was obtained (Fig. 1).

The use of back and forward translation was chosen because it is the strictest method for the instrument translation process owing to the following: (1) the semantic equivalence between the source-language version and target-language version can be verified; (2) the target-language version can be tested for appropriate use in monolingual subjects; and (3) discrepancies between the source language and target language responses are detected.[20]

Phase 2

Apparent Validity—Cultural Adaption

As the version obtained from phase 1 cannot be limited to a simple translation, a conceptual and semantic equivalence with the original version must be ensured, as well as the understanding of the version obtained by the target population; therefore, phase 2 was executed to evaluate the apparent validity of the scale.

For these purposes, a pilot test was performed on a sample of 29 participants contacted by telephone by four researchers who explained the objective, which involved participation in the study and the time allocated to answer the scale questions. Keeping in mind the current regulations against COVID-19 and respecting physical distancing, those who voluntarily accepted to participate were sent a consent form via e-mail, which had to be signed and later returned to the researchers in JPG or PDF format.

Participants were interviewed once, and if they did not understand a question, they were helped by a relative or companion who was familiar with the participant's daily routine. After finishing the scale application in two stages, perceptions and feedbacks were collected through a structured interview of five direct questions.

In a later phase, a committee of experts made up of a doctor, four physical therapists, an occupational therapist, and a social worker discussed the results obtained from the implementation of the PCFS scale, and a consensual version was prepared in Spanish with the changes and adaptations provided by the results obtained in the pilot test.

Finally, the final consensual version of the PCFS scale was reviewed by a Spanish teacher to correct any spelling or grammatical errors.

This study was approved by the ethical review board of a Health Service in Hospital del Salvador (approval date: August 4, 2020). Informed consent was written and obtained from all participants.

Statistical Analysis

The data were analyzed using SPPS 25.0 program (SPPS Inc, Chicago, IL), using descriptive statistics, with distribution

TABLE 1. Examples of retro-translation of Post COVID-19 Functional Status Scale compared to the original version and the 1st Spanish version phase 1

Original Version PCFS Scale	First Retro-Translation	Second Retro-Translation	First Spanish Version (Chile)
3.2. Is assistance essential for using the toilet?	3.2. Is assistance to use the bathroom essencial?	3.2. Is assistance to use the toilet essencial?	3.2. ¿Es esencial la asistencia para usar el baño?
4.2. Is assistance essential for local travel?	4.2. Is assistance for trips local essencial?	4.2. Is assistance for local travel essencial?	4.2. ¿Es esencial la asistencia para los viajes locales?
4.3. Is assistance essential for local shopping?	4.3. Is assistance for local purchases essential?	4.3. Is assistance for local shopping essential?	4.3. ¿Es esencial la asistencia para las compras locales?
5.1. Is adjustment essential for duties/activities at home or at work/study because you are unable to perform these yourself?	5.1. Is it essential to adapt tasks/activities at home or at work/study because you cannot carry them out yourself?	5.1. Is it essential to adjust duties/activities at home or at work/study because you are unable to perform them out yourself?	5.1. ¿Es esencial adaptar las tareas/actividades en el hogar o en el trabajo/estudio porque usted no puede realizarlas por sí mismo?
5.2. Do you occasionally need to avoid or reduce duties/activities at home or at work/study or do you need to spread these over time (while you are basically able to perform all those activities)?	5.2. Do you occasionally need to avoid or reduce tasks/activities at home or at work/study or do you need to spread these over time (while you are basically able to perform all those activities)?	5.2. Do you occasionally need to avoid or reduce duties/activities at home or at work/study or do you need to spread these over time (while you are basically able to perform all those activities)?	5.2. ¿Necesita usted ocasionalmente evitar o reducir las tareas/actividades en el hogar o en el trabajo/estudio o necesita extenderlas a lo largo del tiempo (aunque básicamente usted sea capaz de realizar todas esas actividades)?

by frequency and percentages for categorical variables, means, standard deviation, and lower and upper limits of the 95% confidence interval for continuous variables. The forward translations and back-translations were analyzed in two comparative tables.

RESULTS

Forward Translation and Back-Translation

After the independent translation process, the versions were compared by the investigation group and the translators who deliberated what words should be adjusted for a better understanding by the patient. The few differences observed in word preferences in the translation process are described in a Supplementary File (Supplemental Digital Content 2, http://links.lww.com/PHM/B218).

The back-translation versions were similar, and the most relevant differences were found in items 3.2, 4.2, and 4.3, regarding semantic differences, which were agreed upon by the research group and the translators. In general, the degree of difficulty of the back-translations was low because both were similar, and there were no significant differences between them (Table 1).

The final version obtained from this process was sent to the original authors for review. After reinstating the item "D" death that had been withdrawn by the research group, the version was corrected to be applied in a pilot test.

Logical or Apparent Validity

Participants included patients who had been hospitalized at the Hospital del Salvador for a COVID-19 diagnosis and who were home at the time of the interview. Of the participants, 55.2% were older men (age range, 25–90 yrs), with a technical educational level (37.9%) and who were working (96.5%). The most frequent comorbidity was hypertension (24.2%). During their hospitalization, 31% were in an intensive care unit and 31% had severe functional limitation according to the categorizations of the PCFS scale (Table 2).

The first 15 people interviewed stated that the scale was easy to respond to, with clear instructions, and that the content was adequate to assess their post-COVID-19 functional status (n = 13, 100%). Questions 3.1, "Is assistance essential for eating?," 3.2, "Is assistance to use the bathroom essential?," 3.3, "Is assistance for routine daily hygiene essential?," and 3.4, "Is walking assistance essential?," in which the word "assistance" was used, had to be explained in greater detail and were better understood when the word "help" was used.

Three people (20%) had difficulty responding to question 6.2, as they did not fully understand the term "functional limitation" and thus requested further explanation to obtain an adequate answer according to the subject consulted.

After this review, in the second round of interviews, the scale was applied to 14 additional people; 100% of them considered the scale to be clear and easy and to have sufficient content, and therefore, there was no need to make changes. However, as with the first 15 people evaluated, those in the second round also need a better explanation of what was being referred to when being asked about "functional limitations" in question 6.1.

TABLE 2. Sociodemographic and clinical characteristics of the participants of logical validity

	All (n = 29)
Age, mean ± SD (95% confidence interval), years	59.60 ± 18.00 (52.77–66.46)
Period since hospitality discharge, mean ± SD (95% confidence interval), weeks	4.60 ± 2.00 (3.79–5.30)
Sex	
Female	13 (44.8)
Male	16 (55.2)
Schooling	
Primary Incomplete	4 (13.9)
Primary Complete	1 (3.4)
Secondary Incomplete	3 (10.3)
Secondary Complete	4 (13.8)
Technical Training	11 (37.9)
University	6 (20.7)
Work activity	
Housewife	6 (21.1)
Healthy professional	2 (6.9)
Secretary	2 (6.9)
Senior nursing technician	2 (6.9)
Construction worker	2 (6.9)
Furniture maker	1 (3.4)
Builder	1 (3.4)
Manager	4 (13.8)
Home professional consultant	1 (3.4)
Merchant	2 (6.9)
Retired	1 (3.4)
Doctor	1 (3.4)
Teacher	1 (3.4)
Electrical technician	1 (3.4)
Elevator technician	1 (3.4)
Paramedical technician	1 (3.4)
Marital status	
Single	10 (34.5)
Married	12 (41.4)
Divorced	1 (3.4)
Widowed	6 (20.7)
Comorbidities	
Respiratory/heart diseases	2 (6.9)
Arterial hypertension	7 (24.2)
No comorbidities	7 (24.2)
Incomplete data on medical records	1 (3.4)
Mellitus diabetes	2 (6.9)
Mellitus diabetes/arterial hypertension	5 (17.2)
Respiratory diseases	3 (10.3)
Obesity	2 (6.9)
Functional limitations	
No functional limitations	1 (3.4)
Negligible functional limitations	5 (17.2)
Slight functional limitations	8 (27.6)
Moderate functional limitations	6 (20.7)
Severe functional limitations	9 (31.1)
Stay in intensive care unit	9 (31.0)

TABLE 3. Structured interview to the PCFS scale

1. SOBREVIDA	Calificación correspondiente en la escala PCFS si respuesta es "SI"
1.1 ¿Ha fallecido el paciente después del diagnóstico de COVID-19?	D
2. CUIDADO CONSTANTE *Explicación*: significa que alguien más debe estar a su disposición todo el tiempo. El cuidado puede ser proporcionada por un cuidador entrenado o no entrenado. El paciente generalmente estará postrado en la cama y puede tener incontinencia.	Calificación correspondiente en escala PCFS si respuesta es "SI"
2.1 ¿Requiere usted cuidados contantes?	4
3. ACTIVIDADES BÁSICAS DE LA VIDA DIARIA (ABVD) *Explicación:* la asistencia incluye la ayuda física, instrucción verbal o supervisión de otra persona. Puede considerarse esencial cuando hay una necesidad de ayuda física (por parte de otra persona) con una actividad o para supervisión, o cuando el paciente necesita indicaciones o recordatorios para realizar una tarea. La necesidad de supervisión por razones de seguridad debería obedecer a un peligro objetivo que se presenta, y no "por si acaso".	Calificación correspondiente en escala PCFS si respuesta es "SI"
3.1 ¿Es esencial para usted la asistencia para comer? (Comer sin ayuda: la comida y los utensilios pueden ser proporcionados por otros)	4
3.2 ¿Es esencial para usted la asistencia para usar el baño? (Usar el baño sin ayuda: llegar al baño/inodoro; desvestirse lo suficiente; limpiarse; vestirse y salir)	4
3.3 ¿Es esencial para usted la asistencia para la rutina de higiene diaria? (La rutina de higiene incluye sólo lavarse la cara, peinarse, lavarse los dientes y colocarse la dentadura postiza. Los implementos pueden ser proporcionados por otros sin considerar esto como asistencia)	4
3.4 ¿Es esencial para usted la asistencia para caminar? (Caminar sin asistencia: si es absolutamente necesario, es capaz de caminar en el interior o alrededor de la casa o sala, puede utilizar cualquier ayuda, sin embargo, no requiere ayuda física o instrucción verbal o supervisión de otra persona)	4
4. ACTIVIDADES INSTRUMENTALES DE LA VIDA DIARIA (AIVD) *Explicación*: la asistencia incluye la ayuda física, instrucción verbal o supervisión de otra persona. Puede considerarse esencial cuando hay una necesidad de ayuda física (por parte de otra persona) con una actividad o para supervisión, o cuando el paciente necesita indicaciones o recordatorios para realizar una tarea. La necesidad de supervisión por razones de seguridad debería obedecer a un peligro objetivo que se presenta, y no "por si acaso".	Calificación correspondiente en escala PCFS si respuesta es "SI"
4.1 ¿Es esencial para usted la asistencia para las tareas domésticas básicas que son importantes para la vida diaria? (Por ejemplo: preparar una comida sencilla, lavar los platos, sacar la basura; excluya tareas que no necesitan ser realizadas todos los días)	4
4.2 ¿Es esencial para usted la asistencia para los viajes locales? (Viajes locales sin asistencia: el paciente puede conducir o utilizar el transporte público para desplazarse. La posibilidad de utilizar un taxi es suficiente, siempre que el paciente pueda llamar e indicarle al conductor)	4
4.3 ¿Es esencial para usted la asistencia para las compras locales? (El paciente no es capaz de comprar alimentos o artículos de primera necesidad por sí mismo)	3
5. PARTICIPACIÓN EN ROLES SOCIALES HABITUALES Explicación: esta sección se refiere al disminución en el cumplimiento de los principales roles sociales (no las circunstancias sociales o financieras).	Calificación correspondiente en escala PCFS si respuesta es "SI"
5.1 ¿Es esencial adaptar las tareas/actividades en el hogar o en el trabajo/estudio porque usted no puede realizarlas por sí mismo (por ejemplo, produciendo un cambio en el nivel de responsabilidad, un cambio de tiempo completo a tiempo parcial en el trabajo, o un cambio en la educación)? (El trabajo se refiere tanto al empleo remunerado como al trabajo voluntario. Las adaptaciones especiales que permiten a alguien volver a trabajar, aunque normalmente no podría hacerlo, deben considerarse como una adaptación del trabajo).	3
5.2 ¿Necesita usted ocasionalmente evitar o reducir las tareas/actividades en el hogar o en el trabajo/estudio o necesita extenderlas a lo largo del tiempo (aunque básicamente usted sea capaz de realizar todas esas actividades)?	2
5.3 ¿Ya no puede cuidar bien de sus seres queridos como antes? (Cuidar bien incluye cuidar a su pareja, padres, nietos u otras personas dependientes).	3

(Continued on next page)

TABLE 3. *(Continued)*

5.4 Desde el diagnóstico de COVID-19, ¿Ha tenido problemas en sus relaciones o se ha aislado? (Estos problemas incluyen problemas de comunicación, dificultades en las relaciones con las personas en casa o en el trabajo/estudio, pérdida de amistades, aumento del aislamiento, etc.)	3
5.5 ¿Está restringida su participación en actividades sociales y de ocio? (Incluye pasatiempos e intereses, incluyendo ir a un restaurante, bar, cine, salir a caminar, juegos, lectura de libros, etc.)	2
6. LISTA DE CHEQUEO DE SÍNTOMAS Explicación: estos pueden ser cualquier síntoma o problema informado por los pacientes o encontrado en el examen físico. Los síntomas incluyen, pero no se limitan a: disnea, dolor, fatiga, debilidad muscular, pérdida de memoria, depresión y ansiedad.	Calificación correspondiente en escala PCFS si respuesta es "SI"
6.1 ¿Presenta usted síntomas por los cuales se deben evitar, reducir o extender las tareas/actividades habituales a lo largo del tiempo?	2
6.2 ¿Presenta usted algún síntoma, resultante de COVID-19, sin experimentar limitaciones funcionales?	1
6.3 ¿Tiene usted problemas para relajarse o experimenta el COVID-19 como un trauma? ('Trauma' es definido como: sufrir recuerdos intrusivos, recuerdos recurrentes o respuestas evitativas, asociadas a haber experimentado el COVID-19.)	1

A final version was obtained from this process, which was sent to be reviewed by the original authors of the PCFS scale (Table 3). The PCFS scale and the questionnaire for self-report of PCFS scale are described in a Supplementary File (Supplemental Digital Content 2, http://links.lww.com/PHM/B218).

DISCUSSION

From the process of translation and cross-cultural adaptation of the PCFS scale, a Spanish version that was conceptually and linguistically equivalent to the original instrument was obtained.[14]

The process of translation and cross-cultural adaptation aims to achieve a version of the PCFS scale that presents equivalent semantic, conceptual, and technical levels with the original instrument and can be understood by the people when evaluating their functional status in their local reality.[21]

In the forward validation process, the translator agreed that some words required semantic change, such as the word "duties," which was replaced by "tasks" as it was better understood by people and better suited to the context consulted.

In the back-translation process, in item 3.2, "Is assistance to use the bathroom essential?," one translator used the word "bathroom" whereas the other used "toilet," the equivalent to the original version. Likewise, this occurred in item 4.2, "Is assistance essential for local trips?," where one translator used "trip" whereas the other used "travel," which both are also equivalent to the original scale. Similarly, in item 4.3, "Is assistance essential for local purchases?," one of the translators used "purchases" whereas the other used the concept "shopping," which both are equivalent to the original. In addition, in item 5.1, "Is adjustment essential for duties/activities at home or at work/study because you are unable to perform these yourself?," item 5.2, "Do you occasionally need to avoid or reduce duties/activities at home or at work/study or do you need to spread these over time (while you are basically able to perform all those activities)?," and item 6.1, "Do you report symptoms through which usual duties/activities need to be avoided, reduced or spread over time?," one of the translators used "tasks" whereas the other used "duties," which is equivalent to the original version.

In the process of apparent validation, some words caused confusion. For example, people understood the word "assistance" as "help" and asked whether it meant "need for help" to perform activities such as eating, walking, going to the bathroom, or shopping. In this situation, the experts agreed to keep the word and not make changes that would deviate from the original version.[14] Likewise, in the context in which the person was consulted, the phrase referred to a very specific activity, similar to the questions on scales that assess activities of daily living, which frequently use the word "assistance" and not "help" when referring to a daily life activity.[22,23] Moreover, in the opinion of the experts and the evaluators, for items 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, and 4.3, it was necessary to adapt the questions by adding the phrase "for you," accepting the opinions and perceptions expressed by the patients at the time of evaluation, to make the consulted construct more understandable. Of the individuals who participated in the process of apparent validation, it was identified that most were older adult men, who had comorbidities mainly associated with arterial hypertension (24.2%) and received intensive care (31%) and who at the time of the evaluation with the PCFS scale presented with severe functional limitations (31.1%). These results were similar to previous studies, where older men seem to be most affected, and those with a history of cardiovascular diseases such as hypertension and diabetes mellitus require intensive care.[24,25] Furthermore, the present study showed that most participants had a technical educational level and performed work activities, which are also relevant to the previous study.[26]

A strength to achieving an equivalent Spanish version of the original scale for Chile was having expert translators in the theoretical construction of the instrument who had knowledge about the source and target languages and who were able to analyze all the possible meanings of the items and select the most appropriate terms concerning the original scale as recommended by some authors.[27] In addition, the back-translation process was performed by two translators who were unaware of the original version of the scale to ensure the quality of the translation and to verify that the meaning of the original text was being transmitted coherently and adequately in the translation.[19]

The importance of the cross-cultural validation and adaptation process to guarantee the scientific quality of scales and instruments is worth mentioning; although they have been validated in their country of origin, they cannot be directly used in another country without undergoing the process of cross-cultural adaptation and subsequent validation, thus ensuring their correct use.[28]

In addition, it should be noted that the Spanish version of the PCFS scale should not be used in other Spanish-speaking countries without a previous language review process and, possibly, a cultural adaptation. This reality is present in Latin America, where the Spanish language is shared in different areas, in which the culture profoundly influences the language, which can impact the correct understanding of the scale.[29]

This study corresponds to an ongoing project that considers various stages. After linguistic validation and cross-cultural adaptation of the PCFS scale, its psychometric properties, such as reliability, validity, sensitivity, and specificity, will be evaluated the next stage.

In conclusion, using a systematic and rigorous methodology allowed for obtaining a Spanish version of the PCFS scale for Chile, which is conceptually and linguistically equivalent to the original instrument and adequate to assess the functional status of people infected with COVID-19.

ACKNOWLEDGMENTS

The authors are grateful to all the professionals and participants who have contributed generously to this study.

REFERENCES

1. Guan WJ, Ni ZY, Hu Y, et al: Clinical characteristics of coronavirus disease 2019 in China. *N Engl J Med* 2020;382:1708–20
2. WHO: *Novel Coronavirus 2019*. Geneva, Switzerland, World Health Organisation, 2019
3. Jin Y, Yang H, Ji W, et al: Virology, epidemiology, pathogenesis, and control of COVID-19. *Viruses* 2020;12:372
4. Ñamendys-Silva SA: ECMO for ARDS due to COVID-19. *Heart Lung* 2020;49:348–9
5. Inoue S, Hatakeyama J, Kondo Y, et al: Post-intensive care syndrome: Its pathophysiology, prevention, and future directions. *Acute Med Surg* 2019;6:233–46
6. Ohtake PJ, Lee AC, Scott JC, et al: Physical impairments associated with post-intensive care syndrome: Systematic review based on the World Health Organization's international classification of functioning, disability and health framework. *Phys Ther* 2018;98:631–45
7. Herridge MS, Tansey CM, Matté A, et al: Functional disability 5 years after acute respiratory distress syndrome. *N Engl J Med* 2011;364:1293–304
8. Hermans G, Van den Berghe G: Clinical review: Intensive care unit acquired weakness. *Crit Care* 2015;19:274
9. Bai C, Chotirmall SH, Rello J, et al: Updated guidance on the management of COVID-19: From an American Thoracic Society/European Respiratory Society coordinated international task force (29 July 2020). *Eur Respir Rev* 2020;29:200287
10. Brugliera L, Spina A, Castellazzi P, et al: Rehabilitation of COVID-19 patients. *J Rehabil Med* 2020;52:jrm00046
11. Torres-Castro R, Solis-Navarro L, Sitjà-Rabert M, et al: Functional limitations post-COVID-19: A comprehensive assessment strategy. *Arch Bronconeumol* 2021;57(suppl 1):7–8
12. Amat-Santos IJ, Santos-Martinez S, López-Otero D, et al: Ramipril in high-risk patients with COVID-19. *J Am Coll Cardiol* 2020;76:268–76
13. Liu K, Zhang W, Yang Y, et al: Respiratory rehabilitation in elderly patients with COVID-19: A randomized controlled study. *Complement Ther Clin Pract* 2020;39:101166
14. Klok FA, Boon GJAM, Barco S, et al: The Post-COVID-19 Functional Status Scale: A tool to measure functional status over time after COVID-19. *Eur Respir J* 2020;56:2001494
15. Rivera-Lillo G, Torres-Castro R, Fregonezi G, et al: Challenge for rehabilitation after hospitalization for COVID-19. *Arch Phys Med Rehabil* 2020;101:1470–1
16. von Elm E, Altman DG, Egger M, et al: The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. *Lancet* 2007;370:1453–7
17. Yang LL, Yang T: Pulmonary rehabilitation for patients with coronavirus disease 2019 (COVID-19). *Chronic Dis Transl Med* 2020;6:79–86
18. WHO: *Process of Translation and Adaptation of Instruments*. Geneva, Switzerland, World Health Organization, 2007 [cited December 20, 2020]. Available from: http://www.who.int/substance_abuse/research_tools/translation/en/
19. Sousa VD, Rojjanasrirat W: Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: A clear and user-friendly guideline. *J Eval Clin Pract* 2011;17:268–74
20. Maneesriwongul W, Dixon JK: Instrument translation process: A methods review. *J Adv Nurs* 2004;48:175–86
21. Hilton A, Skrutkowski M: Translating instruments into other languages: Development and testing processes. *Cancer Nurs* 2002;25:1–7
22. Curci C, Pisano F, Bonacci E, et al: Early rehabilitation in post-acute COVID-19 patients: Data from an Italian COVID-19 rehabilitation unit and proposal of a treatment protocol. *Eur J Phys Rehabil Med* 2020;56:633–41
23. Vimercati L, Tafuri S, Chironna M, et al: The COVID-19 hotel for healthcare workers: An Italian best practice. *J Hosp Infect* 2020;105:387–8
24. Martin CA, Jenkins DR, Minhas JS, et al: Socio-demographic heterogeneity in the prevalence of COVID-19 during lockdown is associated with ethnicity and household size: Results from an observational cohort study. *EClinicalMedicine* 2020;25:100466
25. Huang S, Wang J, Liu F, et al: COVID-19 patients with hypertension have more severe disease: A multicenter retrospective observational study. *Hypertens Res* 2020;43:824–31
26. Zhong B-L, Luo W, Li H-M, et al: Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: A quick online cross-sectional survey. *Int J Biol Sci* 2020;16:1745–52
27. Hidalgo Ovejero AM, Menéndez García M, Bermejo Fraile B, et al: Cross-cultural adaptation of the Zurich claudication questionnaire: Validation study of the Spanish version. *An Sist Sanit Navar* 2015;38:41–52
28. Barbero-García I, Vila E, Holgado-Tello F: La adaptación de los test en estudios comparativos interculturales [Tests Adaptation in cross-cultural comparative studies]. *Acción Psicológica* 2008;5
29. Ramada Rodilla J, Serra-Pujadas C, Delclos G: Adaptación cultural y validación de cuestionarios de salud: Revisión y recomendaciones metodológicas. *Salud Publica Mex* 2013;55:57–66