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PROTOCOLOS DE ESTUDO

Cross-Cultural Adaptation and Validity Evidence of the Pictorial Fit-Frail Scale (PFFS) for Brazilian Portuguese: Study Protocol

Adaptação Transcultural e Evidências de Validade da Pictorial Fit-Frail Scale (PFFS) para o Português Brasileiro: Protocolo do Estudo

Adaptación transcultural y Evidencia de Validez de la escala pictórica Fit-Frail (PFFS) al portugués brasileño: protocolo de estudio

Adaptation and Validity Evidence of the Pictorial Fit-Frail Scale: Protocol

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Abstract

Introduction: Frailty is a condition that predisposes older adults to adverse outcomes such as institutionalization, hospitalization, and mortality. Detecting and managing frailty are essential in gerontological care. Although numerous diagnostic and screening tools are described in the literature, few can be used directly by patients, their caregivers, or healthcare professionals. One such tool is the *Pictorial Fit-Frail Scale* (PFFS). **Objective**: To present the protocol for the cross-cultural adaptation and collection of validity evidence of the PFFS instrument for Brazilian Portuguese. **Methods:** This study will be conducted in two phases: (1) cross-cultural adaptation and (2) collection of validity evidence. In the content validity evidence phase, nine participants will be included: three older adults, three caregivers, and three healthcare professionals. Statistical analysis will be performed using Finn's coefficient. In the concurrent validity evidence phase, 141 individuals will participate, distributed equally among older adults, caregivers, and healthcare professionals (47 in each group). The statistical analysis will include Pearson/Spearman correlation tests and Kendall's rank correlation coefficient. **Expected Results and Relevance:** As a self-administered tool that can be easily completed by different individuals involved in the care of older adults, including the older adults themselves, its cross-cultural adaptation and validity evidence for the Brazilian context may significantly contribute to comprehensive elderly care and the promotion of healthy aging.

Keywords: aged; frailty; Gerontology; translating; validation studies; psychometry.

Resumo

Introdução: A fragilidade é uma condição que predispõe pessoas idosas a desfechos negativos como institucionalização, hospitalização e morte. A detecção e manejo da fragilidade são essenciais nos cuidados gerontológicos. Embora existam muitos instrumentos para diagnóstico e rastreamento descritos na literatura, poucos são os que podem ser utilizados pelos próprios pacientes, seus cuidadores ou profissionais da saúde. Este é o caso do *Pictorial Fit-Frail Scale* (PFFS). **Objetivo**: Apresentar o protocolo de adaptação transcultural e de evidências de validade do instrumento PFFS para o português brasileiro. **Métodos**: O estudo será desenvolvido em duas partes: (1) adaptação transcultural; (2) evidências de validade. Na fase de evidências de validade de conteúdo, serão incluídos nove participantes (três pessoas idosas, três cuidadores, três profissionais de saúde). A análise estatística será realizada por meio do coeficiente de Finn. Já na fase de evidências de validade concorrente, participarão 141 indivíduos, distribuídos entre pessoas idosas, cuidadores e profissionais de saúde (47 em cada grupo).

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Para análise estatística, serão utilizados os seguintes testes: correlação pelo teste de *Pearson/Spearman* e coeficiente de correlação por postos de Kendall. **Resultados esperados e relevância**: Por se tratar de um instrumento de preenchimento simples por diferentes pessoas envolvidas nos cuidados de pessoas idosas, incluindo as próprias pessoas idosas, sua adaptação transcultural e validação para o contexto brasileiro podem contribuir para o cuidado integral da população idosa e para a promoção do envelhecimento saudável.

Palavras-chave: idoso; fragilidade; Gerontologia; tradução; estudos de validação; psicometria.

Resumen

Introducción: La fragilidad es una condición que predispone a las personas mayores a desenlaces adversos, como institucionalización, hospitalización y mortalidad. La detección y el manejo de la fragilidad son esenciales en la atención gerontológica. Aunque en la literatura se describen numerosos instrumentos de diagnóstico y detección, pocos pueden ser utilizados directamente por los propios pacientes, sus cuidadores o los profesionales de la salud. Uno de estos instrumentos es el *Pictorial Fit-Frail Scale* (PFFS). **Objetivo**: Presentar el protocolo de adaptación transcultural y recopilación de evidencia de validez del instrumento PFFS al portugués de Brasil. **Métodos**: Este estudio se desarrollará en dos fases: (1) adaptación transcultural y (2) recopilación de evidencia de validez. En la fase de evidencia de validez de contenido, se incluirán nueve participantes: tres personas mayores, tres cuidadores y tres profesionales de la salud. El análisis estadístico se realizará mediante el coeficiente de Finn. En la fase de evidencia de validez concurrente, participarán 141 individuos, distribuidos equitativamente entre personas mayores, cuidadores y profesionales de la salud (47 en cada grupo). El análisis estadístico incluirá pruebas de correlación de Pearson/Spearman y el coeficiente de correlación por rangos de Kendall. **Resultados esperados y relevancia:** Dado que se trata de una herramienta de fácil aplicación por diversas personas involucradas en el cuidado de personas mayores, incluidas las propias personas mayores, su adaptación transcultural y validación en el contexto brasileño pueden contribuir significativamente a la atención integral de la población mayor y a la promoción de un envejecimiento saludable.

Palabras clave: anciano; fragilidad; Geriatría; traducción; estudio de validación; psicometría.

Introduction

Biological aging is a gradual, universal, and heterogeneous process that begins at sexual maturity and accelerates after the age of 50, characterized by physiological and morphological changes (1). It is important to note that each individual experiences aging uniquely, due to the interaction of biopsychosocial and environmental factors influencing this process, highlighting its complexity (2).

In 2022, the Brazilian Institute of Geography and Statistics (IBGE) reported that the older adult population in Brazil exceeded 32 million people, reflecting a 56% increase compared to 2010 (3). This demographic growth presents significant challenges for healthcare, perhaps the most complex being addressing the increasing prevalence of disabling diseases and functional dependency among older adults (4). The "Brazilian Longitudinal Study of Aging" (ELSI), conducted in 2016, revealed that 10.5% of individuals aged 65 or older are functionally dependent. This percentage increases with age: 5.1% among those aged 65–69 and 29.1% among those over 85 years old (5).

According to the World Health Organization (WHO) in its 2015 World Report on Aging and Health, functionality is conceptualized based on two essential aspects: functional ability and intrinsic capacity (6). In the 2020 Integrated Care for Older People (ICOPE) report (7), intrinsic capacity is defined as the combination of physical and mental abilities, including psychological factors. Functional ability, in turn, results from the interaction between this intrinsic capacity and the environment in which a person lives. It is described as the health-related attributes that enable individuals to do or be what they consider important. Thus, functional ability depends on both an individual's intrinsic capacities and their environment, as well as how these two aspects interact. Intrinsic capacity is defined as the sum of all physical and mental capacities available to an individual (7).

Functional decline is a clear indicator of vulnerability and frailty in older adults. Although often associated with aging, it is not a natural consequence of the aging but rather the result of common disabilities in older adults (8).

According to the Brazilian Consensus on Frailty in Older Adults (CBFI) published in 2018, "frailty represents a state of age-related physiological vulnerability, resulting from diminished homeostatic reserve and reduced capacity to cope with a variety of adverse health outcomes, such as hospitalizations, falls, and functional loss, with an increased probability of death" (9).

Lourenço et al. (10) report that the prevalence of frailty in their review study ranged from 6.7% to

74.1%, with variations across studies primarily due to the type of instrument used and the context in which the evaluation occurred.

Therefore, early identification of frailty is essential and should be a cornerstone of gerontological care (10-11). Such early detection would allow for the implementation of appropriate interventions, providing older adults the opportunity to age independently with an improved quality of life (11-12).

For early identification to be effective, it is crucial to use suitable instruments for screening and diagnosing frailty. Various instruments for frailty screening and diagnosis are described in the literature, and many have already been used in the Brazilian context. These instruments follow two primary models: vulnerability and physiological frailty. Among the most used in Brazil are the frailty phenotype, Edmonton Frail Scale (EFS), and Tilburg Frailty Indicator (TFI) (9). Despite the availability of numerous instruments, Lourenço et al. (9) indicate that only some have been adapted and validated for the Brazilian context. Furthermore, there is a consensus on the need to investigate simpler and more accessible methods for identifying frailty to facilitate their application both in specialized services and in primary healthcare settings (13).

Pinto and Pinto (10) conducted a literature review that aimed at identifying instruments for assessing and stratifying frailty in older adults, also sought to determine the easiest-to-use tool based on the COnsensus-based Standards for the selection of health status Measurement INstruments (COSMIN) guidelines. The instruments evaluated ranged from unidimensional (focusing on physical/clinical aspects) to multidimensional (encompassing cognitive, psychological, social, and environmental dimensions). The authors assert that there is no internationally accepted standard instrument for assessing frailty and that some are more suitable for use in hospitals, while others are designed for community settings. Given the complexity of diagnosing frailty, the authors recommend the development of a new standard measurement instrument. Until then, they suggest the combined use of a multidimensional screening tool (for all older adults) and a clinical diagnostic tool (for assessing frail older adults only) (10).

In the search for accessible and effective instruments, Theou et al. (14), at Dalhousie University in Canada, published the Pictorial Fit-Frail Scale (PFFS) in 2019. This instrument assesses frailty using visual pictures. The PFFS evaluates 14 domains, each with three to six levels of ability represented by pictures, allowing the evaluator to select that one that best reflects the individual's usual condition. The use of pictures makes the scale accessible across literacy levels, languages, and cultures. The PFFS is brief, practical, and easy to administer, thus suitable for use by individuals themselves, caregivers, and healthcare professionals (14-15).

Given the relevance and innovation introduced by the PFFS, this study aimed to translate, culturally adapt, and validate the instrument for the Brazilian population. Therefore, this article presents the study protocol for the "Cross-cultural Adaptation and Validity Evidence of the Pictorial Fit-Frail Scale (PFFS) for Brazilian Portuguese".

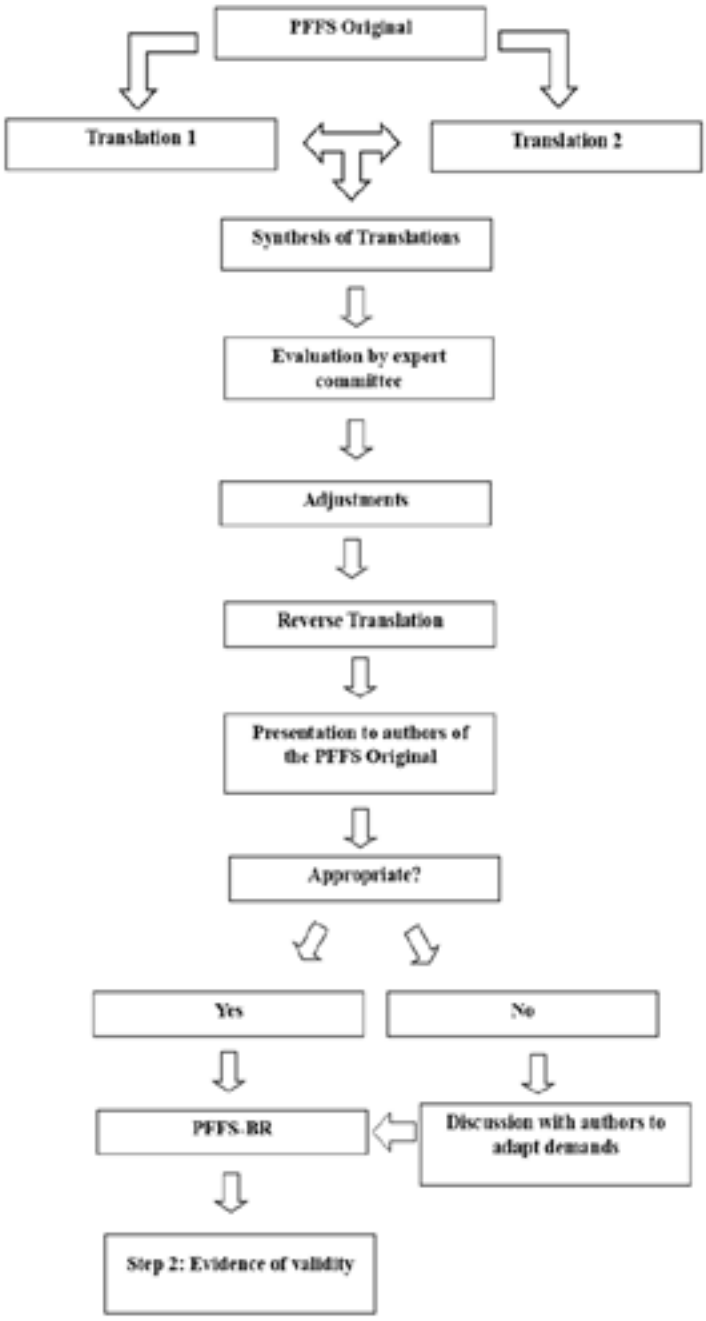
Method

The methods of the study will be presented in two steps: Step 1 (cross-cultural adaptation) and Step 2 (Validity evidence).

Step 1 – Cross-Cultural Adaptation

For this process, there are theoretical frameworks that propose guidelines to ensure that the translation and adaptation of instruments are methodologically correct. In this study, the adaptation process will follow a combination of procedures suggested by Beaton et al. (16), Borsa et al. (17), Gjersing et al. (18), Cassepp-Borges et al. (19), and Hungerbünler and Wang (20). Additionally, the guidelines suggested by the International Test Commission (ITC) for translating and adapting instruments will be considered (21). In order to operationalize the steps used in this project, a flowchart was created as presented in **Figure 1**.

Figure 1 – Flowchart of the translation and adaptation of PFFS-BR*.



* PFFS-BR: Pictorial Fit-Frail Scale-Brazil.

Source: Authors.

In order to enable the study, initial contact was made with Dr. Theou, the principal author of the original study that used the PFFS via email to request permission for the translation and adaptation process. The process of translating and cross-culturally adapting the PFFS instrument will consist of the procedures outlined (**Table 1**).

Table 1 – Process of translation and Cross-Cultural Adaptation of the PFFS instrument.

Stages of Translation and Cross-Cultural Adaptation	Procedures
1) Translation into Brazilian Portuguese	From the original PFFS*, two translations into Brazilian Portuguese will be done by two independent translators, fluent in Portuguese and with a strong command of the English language.
2) Synthesis of the Two Translations of the Instrument	A third independent translator, fluent in Portuguese and with a strong command of English, and a specialist in geriatrics or gerontology, will perform the synthesis of the two translations (PFFS-synthesis of translations).
3) Evaluation of the Synthesis by a Committee of Experts	The translated instrument (PFFS-synthesis of translations) will be evaluated by a committee of experts composed of at least five healthcare professionals with experience in geriatrics or gerontology (nurses, physiotherapists, geriatricians, etc.). Professionals who live and work in different regions of the country will be invited to participate in order to consider regional differences. This committee will evaluate the clarity and adequacy of the instrument (description and pictures) by answering an online questionnaire on the Qualtrics platform. The questionnaire will initially contain 6 questions regarding the sociodemographic data of the experts, followed by questions regarding the instructions (7 questions) and the domains (7 questions for each of the 14 domains) of the PFFS-synthesis of translation. The average time to complete the questionnaire may vary from 30 to 40 minutes. **Eligibility Criteri**a: Inclusion: Specialist in geriatrics or gerontology; Experience with the theme of frailty. Exclusion: Failure to complete or interruption of the questionnaire. In this part of the research, evidence of content validity evidence will be measured, which refers to the degree to which the content of an instrument adequately reflects the construct being measured (22). The data will be organized and analyzed in a database created in the JASP program version 0.14.1 for Windows. The Content Validity Coefficient (CVC) will be calculated and the steps suggested by Sanseverino et al. (23) will be followed: A - The average of each item in the questionnaire will be calculated by adding the Likert scale scores of the experts for each item, divided by the number of experts who will evaluate it. B - The initial CVC will be calculated by dividing the result of the average of each item by the maximum value that the expert could evaluate, in the case of this research, the maximum value of the Likert scale is five. C - The error for each item will be calculated in order to observe possible biases of the experts. This calculation will be done by dividing one by the number of experts, in this study by five, raised to the power of the number of experts, also five (error value). D - The final CVC of each item will be found by subtracting the initial CVC from the error. The agreement index among experts will be calculated using Finn's coefficient. The data will be organized and analyzed in a database created in RStudio version 4.0.3 for Windows. The data will be described using absolute (n) and relative (%) frequencies for categorical (qualitative) variables and using mean and standard deviation for numerical (quantitative) variables. Only items with a CVC higher than 0.80 will be accepted, thus ensuring adequate content validity. Values above 0.75 will be interpreted as indicative of substantial agreement. This criterion reflects the consistency of the experts' assessments, indicating that the items meet the standards of clarity, and relevance established for the research (18).

Stages of Translation and Cross-Cultural Adaptation	Procedures
4) Post-Evaluation Adjustments by the Expert Committee	If needed, reformulations and exclusions of items will be made based on the evaluation results.
5) Semantic Adjustment	If needed, a final semantic adjustment of the scale will be made by the team of experts and translators, based on this process.
6) Reverse Translation	The Portuguese version of the instrument will be translated back into English by a fourth independent translator, fluent in English and with a strong command of Portuguese.
7) Sending the Reverse Translation to the Original Author	The reverse translation of the instrument into English (PFFS-reverse translation) will be sent to the original author to ensure that the content in Portuguese has the same meaning as the original content.
8) Return from the Original Author on the Reverse Translation	If the original author considers the reverse translation appropriate, the new Portuguese version will be used for the next steps of the research. If necessary, further modifications will be made until the Portuguese version is deemed adequate (PFFS-BR**).

* PFFS: Pictorial Fit-Frail Scale.
** PFFS-BR: Pictorial Fit-Frail Scale-Brazil.
Source: Authors.

Step 2 – Validity evidence

The process of gathering validity evidence will involve the following two steps.

Phase I – Content Validity Evidence

Sample

In order to verify the evidence of content validity, the translated and adapted version of the PFFS (PFFS-BR) will be applied to the target audience, which includes three older adults, three caregivers of older adults, and three healthcare professionals with expertise in geriatrics, gerontology, or older adult health (e.g., geriatricians, nurses, physiotherapists). Participants will be recruited through convenience sampling.

Eligibility Criteria

Older Adults

Inclusion criteria: individuals aged 60 years or older who are receiving care at the Geriatrics Outpatient Clinic of São Lucas Hospital, Pontifical Catholic University of Rio Grande do Sul (PUCRS).

Exclusion criteria: illiterate individuals; those with self-reported severe visual and/or hearing impairments; and those with cognitive impairment detected through the Mini-Mental State Examination (MMSE) (24-25).

Caregivers of Older Adults

Inclusion criteria: individuals who have been formal or informal caregivers of older adults for at least three months and are accompanying the older adult during their consultation at the Geriatrics Outpatient Clinic of São Lucas Hospital - PUCRS.

Exclusion criteria: illiterate individuals; those with self-reported severe visual and/or hearing impairments; and caregivers aged 60 years or older with cognitive impairment.

Healthcare Professionals Working with Older Adults

Inclusion criteria: nurses, physiotherapists, and physicians with training in geriatrics and/or gerontology (e.g., residency, postgraduate

degrees, or specialist titles conferred by professional councils or geriatric/gerontology/older adults care societies) who work at São Lucas Hospital - PUCRS.

Exclusion criteria: individuals with self-reported severe visual and/or hearing impairments.

Instruments and Study Procedures

Table 2 presents the instruments that will be used in phase 1 of the study, and the procedures involved, specific to each of the three participants groups: Older Adults (Mini-Mental State Examination – MMSE; Sociodemographic and Health Questionnaire, PFFS-BR; Questionnaire on clarity and adequacy of the PFFS-BR; Instrument for evaluating the level of assistance for completing the PFFS-BR), Caregivers of Older Adults (Mini-Mental State Examination – MMSE**;** Sociodemographic and Caregiving Questionnaire; PFFS-BR; Questionnaire on clarity and adequacy of the PFFS-BR; Instrument for evaluating the level of assistance for completing the PFFS-BR), and Healthcare Professionals **(**Sociodemographic and Professional Practice Questionnaire; PFFS-BR; Questionnaire on clarity and adequacy of the PFFS-BR).

Table 2 – Instruments and procedures of Phase 1.

Instruments		**Procedures**		
Instrument	**Characterization and Cut-off Points**	**Older Adults**	**Caregivers of Older Adults**	**Healthcare Professionals**
Mini-Mental State Examination (MMSE) (24-25)	Total score = 30 points. Cognitive impairment cut-off points: - Illiterate = 19 points - 1 to 3 years of education = 23 points - 4 to 7 years of education = 24 points - 7 or more years of education = 28 points (25)	Filling in by researchers	Filling in by researchers	N/A
Sociodemographic and Health Questionnaire*	- Sex - Age - Race/Ethinicity (26) - Marital status (26) - Children - Living arrangements - Education (5) - Self-perceived health - Personal income (27) - Health conditions/diagnose (26) - Activities of daily living (ADL) (26) - Hospitalizations - Current medications	Filling in by researchers	N/A	N/A

Instruments		Procedures		
Instrument	**Characterization and Cut-off Points**	**Older Adults**	**Caregivers of Older Adults**	**Healthcare Professionals**
Sociodemographic and Caregiving Questionnaire*	- Sex - Age - Race/Ethinicity - Marital status - Type of caregiver - Caregiving duration - Time caring for the current older adult - Primary caregiver status - Paid caregiver - Caregiving training - Other paid employment	N/A	Filling in by researchers	N/A
Sociodemographic and Professional Practice Questionnaire*	- Sex - Age - Race/Ethinicity - Marital status - Postgraduate education in geriatrics and/or gerontology (completed or ongoing) - Professional experience with older adults	N/A	N/A	Filling in by healthcare professionals
PFFS-BR**	Instrument with 14 domains	Filling in by older adults based on their current state	Filling in by caregivers based on the current condition of the older adult they care for	Filling in by healthcare professionals based on a "clinical history" that will be given to them for prior reading
Questionnaire on clarity and adequacy of the PFFS-BR*	Evaluation of the instrument (instruction and domains) regarding clarity and need: - image - language	Filling in by older adults	Filling in by caregivers	Filling in by healthcare professionals
Instrument for evaluating the level of assistance for completing the PFFS-BR*	Level of assistance required for each domain	Filling in by researchers	Filling in by researchers	N/A

* Instruments developed by the authors.
** Instrument to be obtained at the end of Step 1.
Notes: N/A: Not applicable; PFFS-BR: Pictorial Fit-Frail Scale-Brazil; ADL: Activities of Daily Living.
Source: Authors.

Data Analysis

The Content Validity Coefficient (CVC) will be calculated following the steps suggested by Sanseverino et al. (23):

A. The mean score for each item on the PFFS-BR will be calculated by summing the Likert scale ratings for each item and dividing by the number of participants.

B. The initial CVC will be calculated by dividing the mean score for each item by the maximum possible score a participant could give. For this study, the maximum value on the Likert scale is five.

C. The error for each item will be calculated to observe potential biases from the evaluators. This calculation will be done by dividing one, by the number of participants, in this study by 03, raised to the number of participants, also 03 (error value);

D. The final CVC for each item will be obtained by subtracting the error from the initial CVC.

The agreement index among participants will be calculated using Finn's coefficient (28). Data will be organized and analyzed using a database created in RStudio version 4.0.3 for Windows. Data will be described through absolute (n) and relative (%) frequencies for categorical variables, and by mean and standard deviation for quantitative variables.

Phase II – Concurrent Validity Evidence

Sample

Older adults aged 60 years or older (target audience), caregivers of older adults, and healthcare professionals with training in geriatrics, gerontology, or older adults care (e.g., geriatricians, nurses, physiotherapists) will be recruited. The sample will be recruited through convenience sampling at São Lucas Hospital and the Institute of Geriatrics and Gerontology of PUCRS, as well as using the snowball sampling technique.

Eligibility Criteria

Older Adults

Inclusion criteria: aged 60 years or older; able to complete the instruments.

Exclusion criteria: individuals with self-reported severe visual or hearing impairments; those with cognitive impairment detected through the Mini-Mental State Examination (MMSE) (24-25).

Caregivers of Older Adults

Inclusion criteria: Formal or informal caregivers for at least three months, accompanying the older adult to consultations, and residing with the older adult.

Exclusion criteria: Individuals with self-reported severe visual or hearing impairments; those with cognitive impairment detected through the MMSE (24-25).

Healthcare Professionals

Inclusion criteria: training in geriatrics and/or gerontology (e.g., residency, postgraduate degrees, or specialist titles conferred by professional councils or geriatric/gerontology/older adult care societies).

Exclusion criteria: individuals with self-reported severe visual or hearing impairments.

Sample Calculation

The sample calculation considered the need to assess at least 10 people per item of the PFFS, which contains 14 items (n = 140) (29). In order to ensure homogeneity, 141 participants will be recruited, divided into three groups:

- Older adults = 47 participants
- Caregivers of older adults = 47 participants
- Healthcare professionals = 47 participants

Instruments and Study Procedures

Table 3 presents the instruments that will be used in Phase 1 of the study, along with the corresponding procedures specific to each of the three participant groups: Older Adults (Mini-Mental State Examination – MMSE; Sociodemographic and Health Questionnaire; PFFS-BR; Instrument for evaluating the level of assistance for completing the PFFS-BR; Clinical-Functional Vulnerability Index – 20), Caregivers of Older Adults (Mini-Mental State Examination – MMSE; Sociodemographic and Health Questionnaire;

PFFS-BR; Care Instrument for assessing the level of assistance required to complete the PFFS-BR; Clinical-Functional Vulnerability Index – 20), and Healthcare Professionals (Sociodemographic and Professional Practice Questionnaire; PFFS-BR; Clinical-Functional Vulnerability Index – 20).

Table 3 – Instruments and procedures of Phase II.

Instruments		**Procedures**		
Instrument	**Characterization and Cut-off Points**	**Older Adults**	**Caregivers of Older Adults**	**Healthcare Professionals**
Mini-Mental State Examination (MMSE) (24)	Total score = 30 points. Cognitive impairment cut-off points: - Illiterate = 19 points - 1 to 3 years of education = 23 points - 4 to 7 years of education = 24 points - 7 or more years of education = 28 points (25)	Filling in by researchers	Filling in by researchers	N/A
Sociodemographic and Health Questionnaire*	- Sex - Age - Race/ Ethinicity (26) - Marital status (26) - Children - Living arrangements - Education (5) - Self-perceived health - Personal income (27) - Health conditions/ diagnose (26) - Activities of daily living (ADL) (26) - Hospitalizations - Current medications	Filling in by researchers	N/A	N/A
Sociodemographic and Caregiving Questionnaire*	- Sex - Age - Race/ Ethinicity - Marital status - Type of caregiver - Caregiving duration - Time caring for the current older adult - Primary caregiver status - Paid caregiver - Caregiving training - Other paid employment	N/A	Filling in by researchers	N/A

Instruments		Procedures		
Instrument	**Characterization and Cut-off Points**	**Older Adults**	**Caregivers of Older Adults**	**Healthcare Professionals**
Sociodemographic and Professional Practice Questionnaire*	- Sex - Age - Race/ Ethinicity - Marital status - Postgraduate education in geriatrics and/or gerontology (completed or ongoing) - Experience duration with older adults	N/A	N/A	Filling in by healthcare professionals
PFFS-BR**	Instrument with 14 domains	Filling in by older adults based on their current state	Filling in by caregivers based on the current condition of the older adult they care for	Filling in by healthcare professionals based on a "clinical history" that will be given to them for prior reading
Instrument for evaluating the level of assistance for completing the PFFS-BR*	Level of assistance required for each domain	Filling in by researchers	Filling in by researchers	N/A
Clinical-Functional Vulnerability Index – 20 (IVCF-20) (30)	Instrument composed of eight dimensions: - Age - Health perception - ADL - Cognition - Mood - Mobility - Communication - Multimorbidity	Filling in by researchers	Filling in by researchers	Filling in by healthcare professionals based on a "clinical history" that will be given to them for prior reading

* Instruments initially developed by the authors.
** Instrument to be obtained at the end of Step 1.
Notes: N/A: Not applicable; PFFS-BR: Pictorial Fit-Frail Scale Brazil; IVCF-20: Clinical-Functional Vulnerability Index – 20; ADL: Activities of Daily Living.
Source: Authors.

The Clinical-Functional Vulnerability Index (IVCF-20) (30) is a precise instrument for identifying frailty in older adults. In 2019, it was recognized as one of the four best tools worldwide for identifying frailty in this population. It is a multidimensional instrument with rapid application, capable of predicting functional decline or death (30).

Data Analysis

Data will be entered into an electronic form and subsequently exported to an Excel spreadsheet. For data analysis, the Statistical Package for the Social Sciences (SPSS) and/or R (R Core Team, 2021) will be used.

In the descriptive approach, the categorical variables will be presented as absolute (n)

and relative (%) frequencies. The continuous variables will be described using measures of central tendency (mean or median) and dispersion (standard deviation or interquartile range).

In the analytical approach, the normality of the data distribution (continuous variables) will first be tested using the Kolmogorov-Smirnov test.

The correlation analysis between the total scores of the PFFS-BR and IVCF-20 will be conducted using Pearson or Spearman correlation coefficients.

The correlation analysis between the scores of each PFFS-BR domain and the total IVCF-20 score will use Kendall's rank correlation coefficient.

The following values will be used to interpret the correlation coefficients (31):

0.9 to 1 (positive or negative) = very strong correlation

0.7 to 0.9 (positive or negative) = strong correlation

0.5 to 0.7 (positive or negative) = moderate correlation

0.3 to 0.5 (positive or negative) = weak correlation

0 to 0.3 (positive or negative) = negligible correlation

Values of $p < 0.05$ will be considered significant.

Ethical Considerations

This project was submitted for review by the Scientific Committee of the Institute of Geriatrics and Gerontology of PUCRS and the Research Ethics Committee with Human Subjects (CEP-PUCRS). It was registered under number CAAE 66624023.6.0000.5336 and approved under number 5.860.259. The study complies with the principles of Resolution 466/2012 of the National Health Council (32). All participants will sign an Informed Consent Form specific to each step/phase of the study.

Relevance and Dissemination

This study aims to culturally adapt and evaluate the validity evidence of the Pictorial Fit-Frail Scale (PFFS) for the Brazilian context. Cultural adaptation is essential to ensure that the instrument is culturally appropriate and maintains its validity evidence and reliability when applied in a new sociocultural context (15). This process is complex and requires methodological planning and organization (16). The cultural adaptation of the PFFS into Brazilian Portuguese will follow all standard methodological procedures typically used in such processes. These steps will ensure that the Brazilian Portuguese version maintains semantic, idiomatic, experiential, and conceptual equivalence.

The PFFS, the focus of this study, evaluates 14 domains that encompass the multidimensionality of frailty. For each domain, three to six levels of ability are represented by pictures, which sets it apart from instruments that rely on objective assessments (e.g., handgrip strength measurement, part of the frailty phenotype) (33) and questions addressing various domains of frailty. In the case of the PFFS, respondents select the image that best reflects the older person's usual state: self-assessment (which is also a distinguishing feature of this instrument), proxy evaluation by caregivers, and assessment by health professionals. This approach provides a comprehensive and contextualized view of the condition of older adults (14). Thus, the PFFS has the potential to become a relevant tool in the care of the older adult population.

It is important to highlight that multidimensional assessment is crucial for establishing care plans for older adults. In Brazil, the IVCF-20 is widely used and recommended by the Ministry of Health due to its high accuracy in screening for frailty. It is a versatile tool accessible to various healthcare professionals, including nursing technicians, community health workers, and caregivers of older adults in different settings (30). For this reason, the IVCF-20 was chosen as part of the process for analyzing evidence of concurrent validity evidence.

Considering the importance of detecting frailty, the results of this study may have significant implications for both clinical practice and the development of public policies. The findings will be disseminated through scientific publications

and conferences. Additionally, the study aims to contribute scientific outreach, promoting the dissemination and popularization of knowledge.

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Individual Author Contributions

BRM: Study design, Design of study methods, Preparation of the preliminary version of the manuscript, Critical review of the manuscript, Approval of the final version of the manuscript.

ABS: Preparation of the preliminary version of the manuscript, Critical review of the manuscript, Approval of the final version of the manuscript.

TQI: Design of study methods, Critical review of the manuscript, Approval of the final version of the manuscript.

OT: Study design, Design of study methods, Critical review of the manuscript, Approval of the final version of the manuscript.

CHAS: Study design, Design of study methods, Preparation of the preliminary version of the manuscript, Critical review of the manuscript, Approval of the final version of the manuscript.

All authors agreed to be responsible for all aspects of the work.

Conflicts of interest

The authors declare no conflicts of interest. Dr. Olga Theou (with Kenneth Rockwood) has asserted copyright of the Pictorial Fit-Frail Scale, which is made freely available for education, research, and not-for-profit health care. Licenses for commercial use are facilitated through the Dalhousie Office of Commercialization and Industry Engagement.

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