Article

Construction and Content Validation of the Cardiovascular Rehabilitation Measurement Scale*

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Theme: Technologies for healthcare

Contributions to the field: Cardiovascular rehabilitation is presented in Brazilian guidelines as a set of interventions focused on biological aspects, with limited mention of other human dimensions. This study is unique in proposing an unprecedented psychometric instrument to help nurses evaluate interventions aimed at people suffering from cardiovascular events, in order to consider the human dimensions from the perspective of clinical care. This provides an opportunity for targeted application of the nursing process with the aim of ensuring effective rehabilitation.

Abstract

Introduction: Although segmented evaluation strategies exist to verify the presence of empirical indicators of cardiovascular rehabilitation, no instrument has been found to measure this phenomenon in a unified way, considering its multidimensional nature. **Objective:** To construct and validate the content of the Cardiovascular Rehabilitation Measurement Scale. **Materials and Methods:** This is a methodological study, conducted using the premise of the theoretical pole of psychometrics, in two stages: construction of the instrument and content validation by judges. The instrument was constructed by converting operational definitions of rehabilitation markers into behavioral representations of the construct. Validation was enabled by the judgment of nine judges selected through the Lattes Platform. The items were judged based on psychometric criteria. The analysis was based on the content validity index. The binomial test was performed and Cronbach's alpha was established. **Results:** A total of 33 items were developed to compose the scale, based on operational definitions of four dimensions of the construct: rehabilitative care, subject, adherence to therapy, and social. Of the 33 items evaluated, 51.5% had a content validity index equal to 1.00, while 33.3% had an index equal to 0.97. The judges suggested changes to the spelling of 42% of the items, and 93% of the suggestions were accepted. A global validity index of 0.97 and a Cronbach's alpha of 0.92 were obtained, indicating excellent theoretical formulation. **Conclusions:** The scale will enable the measurement of cardiovascular rehabilitation from the perspective of clinical care and may be used in the evaluation of nursing care from the perspective of multidimensional interventions.

Keywords (Source: DeCS)
Methodological nursing research; psychometrics; cardiovascular nursing; rehabilitation nursing; cardiac rehabilitation.

Construcción y validación del contenido de la Escala de Medición de la Rehabilitación Cardiovascular*

* El artículo se deriva de la tesis de maestría "Desenvolvimento de escala para mensuração da reabilitação cardiovascular: contribuição para o cuidado clínico de enfermagem" (Desarrollo de escala para medición de la rehabilitación cardiovascular: aportes a la atención clínica en enfermería), presentada al Programa de Posgrado en Cuidados Clínicos en Enfermería y Salud de la Universidade Estadual do Ceará, Brasil. Disponible en: https://www.uece.br/ppcclis/pesquisa/dissertacoes-teses-e-relatorios/dissertacoes/dissertacoes-2022/

Resumen

Introducción: aunque existan estrategias de evaluación segmentadas para verificar la presencia de indicadores empíricos de rehabilitación cardiovascular, no existía un instrumento que midiera este fenómeno de forma unificada, considerando su naturaleza multidimensional. **Objetivo:** construir y validar el contenido de la Escala de Medición de Rehabilitación Cardiovascular. **Materiales y método:** estudio metodológico, realizado con premisas del polo teórico de la psicometría, en dos etapas: construcción del instrumento y validación de contenido por jueces. El instrumento se construyó convirtiendo las definiciones operacionales de los marcadores de rehabilitación en representaciones conductuales del constructo. La validación fue posible gracias al juicio de nueve jueces seleccionados a través de la Plataforma Lattes. Los ítems se juzgaron según criterios psicométricos. Se analizaron en función del índice de validez de contenido. Se realizó la prueba binomial y se estableció el alfa de Cronbach. **Resultados:** Se desarrollaron 33 ítems para componer la escala, basados en definiciones operacionales de cuatro dimensiones del constructo: cuidados rehabilitadores, sujeto, adherencia terapéutica y social. De los 33 ítems evaluados, el 51,5 % obtuvo un índice de validez de contenido de 1,00 y el 33,3 % de 0,97. Los jueces sugirieron cambios en la ortografía del 42 % de los ítems, y el 93 % de las sugerencias fueron aceptadas. Se obtuvo un índice de validez global de 0,97 y un alfa de Cronbach de 0,92, parámetros que indican una excelente formulación teórica. **Conclusiones:** La escala permitirá medir la rehabilitación cardiovascular desde la perspectiva de los cuidados clínicos, y puede utilizarse para evaluar los cuidados de enfermería desde la perspectiva de las intervenciones multidimensionales.

Palabras clave (Fuente: DeCS)
Investigación metodológica en enfermería; psicometría; enfermería cardiovascular; enfermería de rehabilitación; rehabilitación cardiaca.

Construção e validação de conteúdo da Escala de Mensuração da Reabilitação Cardiovascular*

* Este artigo é derivado da dissertação de mestrado intitulada "Desenvolvimento de escala para mensuração da reabilitação cardiovascular: contribuição para o cuidado clínico de enfermagem", submetida ao Programa de Pós-Graduação em Cuidados Clínicos em Enfermagem e Saúde da Universidade Estadual do Ceará, Brasil. Disponível em: https://www.uece.br/ppcclis/pesquisa/dissertacoes-teses-e-relatorios/dissertacoes/dissertacoes-2022/

Resumo

Introdução: Apesar de haver estratégias avaliativas segmentadas para a verificação da presença de indicadores empíricos da reabilitação cardiovascular, inexistia um instrumento para mensurar, de forma unificada, tal fenômeno, considerando seu caráter multidimensional. **Objetivo:** construir e validar o conteúdo da Escala de Mensuração da Reabilitação Cardiovascular. **Materiais e método:** estudo metodológico, realizado mediante pressupostos do polo teórico da psicometria, em duas etapas: construção do instrumento e validação de conteúdo por juízes. A construção ocorreu por meio da conversão de definições operacionais de marcadores da reabilitação em representações comportamentais do constructo. A validação foi oportunizada pelo julgamento de nove juízes selecionados pela Plataforma Lattes. Os itens foram julgados considerando critérios psicométricos. A análise foi feita com base no índice de validade conteúdo. Foi realizado o teste binomial e estabelecido o alfa de Cronbach. **Resultados:** foram elaborados 33 itens para compor a escala, sendo oriundos de definições operacionais de quatro dimensões do constructo: cuidado reabilitador, sujeito, adesão terapêutica e social. Dos 33 itens avaliados, 51,5 % apresentaram índice de validade de conteúdo igual a 1,00 e 33,3 %, igual a 0,97. Os juízes realizaram sugestões de alterações da grafia de 42 % dos itens, sendo 93 % das sugestões acatadas. Obteve-se índice de validade global de 0,97 e alfa de Cronbach de 0,92, parâmetros indicativos de excelente formulação teórica. **Conclusões:** A escala viabilizará a medição da reabilitação cardiovascular na perspectiva do cuidado clínico, podendo ser utilizada na avaliação dos cuidados de enfermagem sob a ótica de intervenções multidimensionais.

Palavras-chave (Fonte DeCS)
Pesquisa metodológica em enfermagem; psicometria; enfermagem cardiovascular; enfermagem de reabilitação; reabilitação cardíaca.

Introduction

The First National Consensus on Cardiovascular Rehabilitation (1), documented in 1997, highlights that although there are records of actions aimed at promoting health and physical activity since the nineteenth century, cardiovascular rehabilitation (CVR) is still considered a recent intervention in cardiology. It was only in the 1960s that substantial changes in lifestyle habits and physical training associated with CVR were more clearly and effectively noted. Thus, despite being considered recent, CVR care has since assumed a multidimensional character, with the implementation of patient and family care to contribute to biological, psychological, and social well-being (2-4).

In this context, considering the multiple dimensions of the phenomenon, numerous empirical indicators of the effectiveness of rehabilitation are currently recognized: Functional independence through self-care, knowledge of the health and disease process, emotional autonomy, emancipation in society, and better interpersonal relationships (5).

However, although there are evaluation strategies for checking the presence or absence of these indicators (6-8), there was no instrument for measuring CVR that addressed its multidimensional nature, without segmenting the evaluation approach and, consequently, the interventions.

Based on these ideals, from the perspective of clinical care in healthcare and nursing, the usability of psychometric concepts has been noted in the development, adaptation, and validation of scales that concurrently contribute to improving care and the quality of life of the population (9-11).

Therefore, in light of the relevance of evaluating rehabilitative care in multiple dimensions and the need to support the evaluation of interventions related to the recently established Mid-Range Theory for CVR Nursing (3), the following research question emerged: Is the content of a CVR measurement scale, built upon operational definitions of CVR markers from the perspective of clinical care in healthcare and nursing, valid?

Thus, the aim of this study was to construct and validate the content of the CVR Measurement Scale.

Materials and Methods

This is a methodological study, based on the premises of the theoretical pole of psychometrics (12), developed in two stages: Construction of the instrument and content validation by judges.

The construction of the instrument, which occurred in September 2022, was based on converting the operational definitions of the

CVR markers into scale items. These markers were identified in an integrative literature review and defined to situate the construct exactly and precisely, establishing its boundaries and limits. The markers and constitutive definitions that led to the instrument's items were validated by judges, and their data were published (13).

When drafting the pilot instrument, considering psychometric principles (12, 14), the behavioral representations of the construct were operationalized in tasks that people had to perform to assess the magnitude of the presence of this phenomenon. Therefore, the items were designed to corroborate the following criteria: Behavioral, simplicity, clarity, precision, amplitude, and balance (12).

Consequently, given the hypothesis that these items adequately represented the indication for rehabilitation and that their construction using operational definitions was validated by judges (13), this hypothesis was tested between October and December 2022, based on theoretical analysis through content validation. During this phase, specialists were contacted to verify the adequate behavioral representation of the latent attributes.

The criteria used to select the judges were based on Jasper's requirements (15), and specialists who met at least two of the established criteria were eligible: (a) skill and knowledge in the field based on proof of experience of at least six months working in CVR; (b) skill and specialized knowledge based on evidence of postgraduate studies with a study conducted in the field of CVR; (c) special skill in CVR through proof of publication of articles related to the theme; (d) passing a specific test, such as recognition by the Brazilian Society of Cardiovascular Nursing for the title of specialist in cardiovascular nursing; and (e) a high rating awarded by an authority, by receiving an honorable mention for a study conducted in the field of CVR.

It is considered adequate to conduct this task with a minimum of six judges (14). However, it was accomplished with nine specialists, who were selected through a survey on the Lattes Platform, using the search equation "cardiovascular rehabilitation" AND "care", in the databases of medical doctors and other researchers. Of the 340 researchers identified, an invitation letter was sent to those who met the selection criteria and had an explicit e-mail address or could be easily reached on institutional websites. If they accepted, they were sent the informed consent form and the evaluation tool.

The aspects considered in the validation of the items were the criteria established by Pasquali (12) for the adequate elaboration of instrument items, the same ones adopted in its construction: Behavioral, simplicity, clarity, and precision. In addition to the individual evaluation of the items, a joint evaluation of the instrument was conducted based on the criteria of amplitude and balance.

To measure agreement or disagreement with the above aspects, a four-point Likert-type categorical scale was used, where: (a) the operationalization of the construct is not indicative of CVR; (b) the operationalization of the construct is partially indicative of CVR; (c) the operationalization of the construct is indicative of CVR; and (d) the operationalization of the construct is totally indicative of CVR. Responses 3 and 4 were considered to be in agreement.

To analyze the data, the content validity index (CVI) was calculated, with the following criteria: CVI ≥ 0.78 — excellent; CVI between 0.60 and 0.77 — good; and CVI < 0.59 — poor (16).

To estimate statistical reliability, the binomial test was used, which considered a p-value greater than 0.05 and a ratio of 0.78 for the agreement of responses between the judges in relation to the evaluation of the instrument. Cronbach's alpha was used to analyze reliability (internal consistency criterion), with values higher than 0.70 being considered adequate; however, values higher than 0.95 would indicate instrument redundancy, as they signal a highly strong correlation.

The research was approved by the Ethics Committee for Research with Human Beings of the Universidade Estadual do Ceará, with Opinion 5.643.183 and CAAE (Certificate of Presentation for Ethical Appreciation) 60589122.5.0000.5534.

Results

A previous study (13) identified CVR markers and developed and validated their constitutive and operational definitions, categorizing the essential elements of the phenomenon into four dimensions: Rehabilitative care, subject, treatment adherence, and social. The operational definitions of each of the markers were converted into attitudes or perceptions that indicate the effectiveness of rehabilitation, which ultimately resulted in the construction of 33 items to comprise the first version of the CVR Measurement Scale. Table 1 describes the items prepared, the original operational definitions, and the CVR marker referred to by item.

Table 1. Items from the first version of the scale followed by their original operational definitions and related markers. Sobral, Ceará, Brazil, 2024

Number	Item from the First Version of the Scale	Operational Definition	Marker
"Rehabilitative care" dimension			
1	I receive follow-up from healthcare professionals of different categories, not just medical doctors.	To receive follow-up from other healthcare professionals, in addition to medical doctors.	Multidisciplinary follow-up
2	I have done or am currently doing physical exercises within a healthcare service under the supervision of a healthcare professional.	To receive a prescription for supervised physical exercise. To perform physical exercises under the supervision of a healthcare professional.	Supervised physical exercise

Number	Item from the First Version of the Scale	Operational Definition	Marker
3	I receive guidance on the correct way to perform physical exercises alone.	To receive guidance on physical exercise. To receive guidance on habits to prevent risk factors. To receive guidance on the signs and symptoms of the disease. To be aware of the treatment. To receive guidance on how to perform self-care. To receive guidance on sexual activity. To receive nutritional guidance. To receive guidance on the use of medications.	Health education
4	I receive clarification regarding my cardiovascular disease.		
5	I receive guidance on how to perform self-care.		
6	I receive guidance on sexual activity.		
7	I receive guidance on adequate nutrition.		
8	I receive guidance on the use of medications.		
9	I receive guidance from healthcare professionals regarding the benefits of adequately treating the disease.	To receive advice from healthcare professionals on the best lifestyle habits. To receive advice on the impact or benefits of treatment.	Guidance
"Subject" dimension			
10	I believe that the treatment is having positive results.	To have a positive perception of the treatment process. To have confidence in the treatment. To be satisfied with the current state of health.	Disease acceptance
11	I am satisfied with my current state of health.		
12	I feel that I am responsible for my self-care.	To feel responsible for self-care. To participate in care planning with the professional(s). To establish a self-care routine. To recognize the importance of treatment adherence.	Self-care
13	I participate in the planning of my treatment.		
14	I have a personal care routine.		
15	I believe it is important to adhere to the prescribed treatment.		
16	I am satisfied with my body.	To feel satisfied with one's own body.	Improved body image
17	I exercise correctly as prescribed or advised by my healthcare professional.	To exercise regularly. To follow the exercise routine as prescribed or advised by a healthcare professional.	Physical exercise practice
18	I engage in sexual activity with the same frequency and quality as I did before my cardiovascular disease.	To engage in sexual activity with the same frequency and quality as before suffering the cardiovascular event.	Sexual activity
19	I feel that I have adapted to the consequences of the disease in my life.	Feeling adjusted to the new living conditions.	Stress management
20	I feel that I am capable of solving my problems.	To feel capable of solving existing problems. To seek alternatives to solve problems.	Coping with problems
21	I seek solutions to the problems that arise.		
22	I feel calm and free from anxiety.	To not feel tense or anxious. To not worry excessively.	Anxiety management

Number	Item from the First Version of the Scale	Operational Definition	Marker
23	I feel happy.	To feel happy. To feel hopeful. To feel motivated.	Depression management and self-efficacy
24	I feel hopeful and confident.		
25	I feel motivated.		
"Treatment adherence" dimension			
26	I believe that a healthy diet is important for my treatment.	To recognize the importance of a healthy diet. To eat fruits and vegetables. To eat fish and lean meats.	Healthy diet
27	I eat fruits.		
28	I eat vegetables.		
29	I eat fish and lean meats.		
30	I have reduced my cigarette consumption (Note: non-smokers should select option 4 — Always).	Decrease cigarette consumption compared to before the cardiovascular event.	Decrease in smoking
31	I take my medications correctly, following my medical prescription.	To receive guidance on the use of medications. To recognize the importance of complying with medical prescriptions. To take all medications at the correct times.	Adherence to medication therapy
"Social" dimension			
32	I receive family support.	To receive family support.	Family support
33	I am able to perform the work activities that I used to perform before the cardiovascular event.	To be able to perform work activities that were performed prior to the cardiovascular event.	Resumption of work activities

Source: B on the operational definitions and CVR markers of Frota et al. (13).

It is worth noting that the operational definitions that led to the items in the instrument stemmed from constitutive definitions produced from a systematic bibliographic survey of national and international publications (13). Therefore, nine items were established to represent the "Rehabilitative Care" dimension, which incorporated elements of the characterization of clinical and educational care provided to individuals; sixteen items to represent the "Subject" dimension, covering elements related to individuals in rehabilitation, such as physical conditioning, health-related behaviors, and psycho-emotional aspects; six items in the "Treatment Adherence" dimension, with elements related to the subject's adherence to treatment, aligning habit changes and medication. Finally, the "Social" dimension consisted of two items, referring to social support and reintegration into society.

To measure the defined expressions, a Likert scale was used, with scores ranging from 1 to 4, where: 1 — "action never performed"; 2 — "action performed occasionally"; 3 — "action performed frequently"; and 4 — "action always performed." In this sense, it was deemed

wise not to use a neutral score in the instrument, given the inaccuracy of a result that would point to an indifferent CVR. Thus, in the first version of the scale, it was suggested that the measurement results should be calculated using the following formula:

$$\frac{\text{Number of items marked with “3” or “4” x 100}}{\text{Total number of items (33)}}$$

Consequently, the theoretical analysis based on content validation by judges was conducted with a sample of 67% (n = 6) female and 33% (n = 3) male participants, with a mean age of 31 years. In terms of occupation, 56% (n = 5) worked in cardiovascular nursing care, 22% (n = 2) in the management of healthcare services focused on cardiology, and 22% (n = 2) in nursing education. The mean work experience in the labor market was nine years.

Table 2 shows the CVI for each item in the first version of the CVR Measurement Scale, considering all the psychometric criteria evaluated.

Table 2. CVI of the items of the CVR measurement instrument. Sobral, Ceará, Brazil, 2024

Items	CVI	95% confidence interval		p-value
		Lower limit	Upper limit	
I receive follow-up from healthcare professionals of different categories, not just medical doctors.	1.00	0.90	1.00	0.160
I have done or am currently doing physical exercises within a healthcare service under the supervision of a healthcare professional.	0.94	0.81	0.99	0.500
I receive guidance on the correct way to exercise alone.	1.00	0.90	1.00	0.160
I receive clarification regarding my cardiovascular disease.	0.97	0.86	1.00	0.409
I receive guidance on how to perform self-care.	0.97	0.86	1.00	0.409
I receive guidance concerning sexual activity.	0.97	0.86	1.00	0.409
I receive guidance on adequate nutrition.	1.00	0.90	1.00	0.160
I receive guidance on the use of medications.	0.97	0.86	1.00	0.409
I receive guidance from healthcare professionals regarding the benefits of adequately treating the disease.	1.00	0.90	1.00	0.160
I participate in my treatment planning.	1.00	0.90	1.00	0.160
I believe it is important to adhere to the prescribed treatment.	1.00	0.90	1.00	0.160
I believe that the treatment is having positive results.	1.00	0.90	1.00	0.160

I feel that I am responsible for my self-care.	1.00	0.90	1.00	0.160
I have a personal care routine.	1.00	0.90	1.00	0.160
I am satisfied with my body.	0.94	0.81	0.99	0.500
I am satisfied with my current state of health.	1.00	0.90	1.00	0.160
I perform physical exercises correctly as prescribed or advised by a healthcare professional.	0.97	0.86	1.00	0.409
I engage in sexual activity with the same frequency and quality as I did before my cardiovascular disease.	0.97	0.86	1.00	0.409
I feel that I have adapted to the consequences of the disease in my life.	0.94	0.81	0.99	0.500
I feel that I am capable of solving my problems.	1.00	0.90	1.00	0.160
I seek solutions to the problems that arise.	0.94	0.81	0.99	0.500
I feel calm and free from anxiety.	1.00	0.90	1.00	0.160
I feel happy.	1.00	0.90	1.00	0.160
I feel hopeful and confident.	1.00	0.90	1.00	0.160
I feel motivated.	0.97	0.86	1.00	0.409
I believe that a healthy diet is important for the treatment.	1.00	0.90	1.00	0.160
I eat fruits.	0.97	0.86	1.00	0.409
I eat vegetables.	0.97	0.86	1.00	0.409
I eat fish and lean meats.	0.97	0.86	1.00	0.409
I have reduced my cigarette consumption (Note: Non-smokers should select option 4 — Always).	1.00	0.90	1.00	0.160
I take my medications correctly according to the medical prescription.	1.00	0.90	1.00	0.160
I receive family support.	0.97	0.86	1.00	0.409
I am able to perform the work activities that I used to before the cardiovascular event.	0.92	0.78	0.98	0.296

Source: Prepared by the authors.

Thus, the global CVI was 0.97. Cronbach's alpha was 0.92, indicating high agreement among the judges. In addition, the specialists suggested changes to the spelling of 42% (n = 14) of the items, with 93% (n = 13) of the suggestions being accepted. Table 3 details these suggestions and the changes made.

Table 3. Suggestions and changes to the items in the instrument. Sobral, Ceará, Brazil, 2024

Item	Judges' Suggestions	Item Changed
I have done or currently do physical exercises within a healthcare service under the supervision of a healthcare professional.	To clarify that the expression "have already done" does not include exercise prior to cardiovascular disease.	After developing the heart condition, I have been exercising at a health center under the supervision of a healthcare professional.
I receive guidance on the correct way to exercise alone.	To clarify who the guidelines are coming from.	I receive guidance from a healthcare professional on the correct way to exercise alone.
I receive clarification about my cardiovascular disease.	To clarify who the guidelines are from and replace "cardiovascular disease" with cardiac or heart disease.	I receive clarification from a healthcare professional regarding my heart condition.
I receive guidance on how to perform self-care.	To clarify who the guidelines are coming from.	I receive guidance from healthcare professionals on how to perform self-care
I receive guidance regarding sexual activity.		I receive guidance from a healthcare professional regarding sexual activity.
I receive guidance on adequate nutrition.		I receive guidance from healthcare professionals on adequate nutrition.
I receive guidance on the use of medications.		I receive guidance from healthcare professionals on the use of medications.
I believe it is important to adhere to the prescribed treatment.	Replace "I believe" with "I understand" and "adhere" with "follow".	I understand that it is important to follow the prescribed treatment.
I believe the treatment is having a positive effect.	Replace "I believe" with "I notice".	I notice that the treatment is having positive results.
I engage in sexual activity with the same frequency and quality as I did before my cardiovascular disease.	Replace "cardiovascular disease" with cardiac or heart disease.	I engage in sexual activity with the same frequency and quality as I did before my heart disease.
I seek solutions to the problems that arise.	Replace "problems that arise" with "problems that arise on a daily basis."	I seek solutions to the problems that arise on a daily basis.
I take my medication correctly according to the medical prescription.	Replace "medical prescription" with indicate other prescriptions.	I take my medication as prescribed by the healthcare professional.
I am able to perform the labor activities that I did before the cardiovascular event.	Replace "cardiovascular event" with "illness" and the term "labor activity" with "work activity."	I am able to perform my work activities exactly as I did before my heart condition.
I receive family support.	Replace it with "my family understands my treatment."	*Item not changed as the suggestion does not correspond to the original operational definition.*

Source: Prepared by the authors.

Besides the changes above, no changes were made to the structure of the measure established in the first version of the instrument.

Discussion

This study presents the process of constructing and validating the content of the CVR Measurement Scale. The 33 items on the scale were developed based on the establishment of indicative aspects of CVR identified in scientific publications, which enabled the categorization of essential elements into constituent dimensions of the phenomenon (13).

This configuration covered aspects related to the characteristics of the care received by the patient, focusing on their rehabilitation, the subject's condition during rehabilitation interventions, adherence to treatment, and the social context, meeting the need for dynamic, participatory, and active collaboration between the patient, family, and multidisciplinary team, and the integration of conditioning factors for maintaining quality of life (3, 5, 13, 17-22).

Considering the content validation phase, this was an important step, given the need to verify the extent to which the items in the measure determine the content and adequately represent the construct (14). It was found that all items on the scale were validated, as they obtained CVI ≥ 0.78 and $p > 0.05$. Of the 33 items, 51.5 % (n = 17) had a CVI = 1.00 and 33.3 % (n = 11) had a CVI = 0.97. The item with the lowest CVI was "I am able to perform the labor activity (work) that I did before the cardiovascular event," with a CVI = 0.92. In any case, it was demonstrated that all items had high content validity, since all had a CVI > 0.90.

Regarding the mean CVI by CVR dimensions, CVI = 0.98 was found in the dimensions "Rehabilitative care", "Subject," and "Treatment adherence", while CVI = 0.94 was found in the "Social" dimension. The lower mean of the latter is justified by the fact that it contains the item with the lowest CVI on the scale, in addition to having the smallest number of items in the instrument (n = 2).

In contrast, the changes made to the scale, at the suggestion of the judges, went beyond the need to provide detailed information and replace terms that could lead to double meanings or difficulty in understanding.

It should be noted that the only suggestion that was not accepted was related to the item "I receive family support", since this item was developed based on an operational definition that does not restrict family support to what was proposed by the specialist ("Understanding of treatment by family members"). In this sense, no changes were made to the meaning of the expressions in the latest version of the scale, which ensures that the content of the reworked items does not need to be validated.

Regarding the scale measurement strategy, the established formula was considered adequate for its purpose, as it shows the percentage of attitudes and perceptions considered indicative of rehabilitation effectiveness. Thus, it should be interpreted as follows: a) scores equal to or greater than 50% indicate the probable effectiveness of the CVR process, since more than half of the items marked correspond to actions indicative of rehabilitation performed always or often; and b) scores below 50% indicate that CVR is not being effectively achieved, since more than half of the items marked correspond to CVR actions performed rarely or never.

In this context, 100% and 0% are, respectively, the maximum and minimum values on the scale. Therefore, the closer to the maximum value, the greater the indication that the CVR is being achieved, while proximity to the minimum value indicates that the CVR is not being achieved. It should be noted that, due to the need to establish parameters for verifying the scale result, the 50% cutoff point used in the interpretation is an initial judgment. The statistical analysis used for the exact definition is not part of the theoretical analysis of the study, and it must be established in subsequent psychometric phases (12, 14).

In this sense, despite the existence of methods for evaluating the supervised CVR technique (23, 24) and instruments that propose the measurement of specific attributes of the phenomenon (6-8), the CVR Measurement Scale aims to support the clinical evaluation inherent to the nursing process and advanced practice, as well as to guide care management, as proposed by the applicability of psychometrics in nursing interventions (10).

Considering that nurses perform a key role in education and health status management (25), in the promotion of quality of life (26), being able to use care technologies (27), it is encouraged to implement the CVR Measurement Scale in varying contexts of individual rehabilitation, such as rehabilitation programs or unscheduled care processes, with the added benefit of identifying dimensions that require additional input from caregivers.

Conclusions

The present study achieved its objective of constructing the CVR Measurement Scale and validating it with specialists in the field, following the premises of the theoretical pole of psychometrics. The content validation process revealed excellent theoretical formulation, but judgment by representatives of the target audience is still necessary, which will be continued in the future.

Regarding the contribution of the research to nursing science, the advancement attributed to its usefulness in the context of clinical care after a cardiovascular event stands out. Therefore,

its applicability to the nursing process of the Medium-Range Theory for Cardiovascular Rehabilitation Nursing (3) can be considered, in view of the following aspects: (a) there is proximity between the theory's proposal for multifactorial interventions and the dimensionality assessed in this study; and (b) the theory's premises supported the assessment of the dimensionality (13) attributed to the phenomenon that led to the creation this instrument.

In this context, the psychometric design of the instrument enables nursing professionals to answer the following question: Is the CVR being fully achieved, partially achieved, or not achieved at all? With this, interventions can be established based on the real needs of the person receiving care.

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