

# Content Validity of an Instrument for Assessing Healthcare Needs of People with Disabilities

ORIGINAL

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## Abstract

**Objective:** To validate the content of an instrument for assessing the healthcare needs of people with physical, hearing and visual disabilities.

**Method:** A methodological study divided into three steps: literature review, and construction and validation of instrument for assessing the healthcare needs of people with disabilities. The content of the items was validated using the Delphi technique and application of the instrument for 33 experts in the first round and 18 experts in the second round. The content validity index ( $> 0.80$ ) and the trustworthiness of the items of the instrument were verified using Cronbach's alpha.

**Results:** During the first Delphi round, it was verified that five items of the dimension sociodemographic data and two items of the dimension living conditions did not reach the established content validity index. In the other items, there was an agreement, and the content validity index ranged from 0.82 and 1. In the second round, after accepting suggestions from the experts, all the evaluated items reached excellent indexes. Significant differences were found for the dimensions sociodemographic data, living conditions and in domain 1 ( $p > 0.05$ ). Cronbach's alpha was 0.884 in Delphi round I and 0.825 in Delphi round II.

**Conclusions:** The proposed instrument presents satisfactory validity and reliability values and serves as a guide to assess the healthcare needs of people with disabilities. This instrument can be used to portray the healthcare needs of people with physical, hearing and visual disabilities.

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## Keywords

People with disabilities;  
Validation Studies; Needs and Demands of Health Services;  
Delphi Technique.

## Introduction

The number of people with disabilities (PWD) has increased considerably, hence the need for healthcare for this population group around the world. Disabilities affect people of all age groups, although children are mostly affected by congenital deficiencies, while young adults and the elderly are mostly affected by acquired deficiencies. These disabilities are mainly the result of congenital and chronic diseases, accidents, urban violence and medical malpractice [1].

A large part of PWD are believed to be dependent on healthcare services [2] and their living conditions usually generate healthcare needs [3] that are not met by the competent bodies. A useful strategy to support actions within the scope of health/disease or the planning of actions and public policies for this population is the creation of instruments to assess the healthcare needs of PWD. An instrument that meets the prerogative of the Convention on the Rights of Persons with Disabilities [4] based on the slogan "Nothing about us without us" places PWD as the protagonists of all the stages of this process in order to promote, recover or rehabilitate the health of users, their families and the community [2-3].

However, a specific instrument that can assess the healthcare needs of PWD is unknown, as found in an integrative literature review. This finding can be the result of the exclusion and segregation that PWD must endure, where their voices are silenced and their rights misrepresented and/or vilified, resulting in abandonment and neglect in several areas of their lives, especially their health [5-6]. The assessment of healthcare needs using the instrument can positively influence reflection on public policies, improve quality of life, and help overcome exclusive attitudes by reducing social and healthcare-related inequalities.

To this end, we chose to carry out the content validity of a health needs assessment tool for people with disabilities. The validation process is deter-

mined by the representation of items that express a content, based on the judgment of experts and their expertise in a specific area and notable recognition for their skills and expertise. Means that the content validation determines whether the content of a measuring instrument explores, effectively, the questions to measure a certain phenomenon to be investigated [7]. In this study, we chose to perform the theoretical analysis by experts, who think of the relevance of the instrument items [7].

Thus, in the scope of health practices and planning, the assessment of healthcare needs becomes relevant in that it seeks to understand and support the reality of patients and maximise the real possibility of intervention. Therefore, the aim was to validate the content of an instrument to assess the healthcare needs of patients with physical, hearing and/or visual disabilities.

## Method

This is a methodological study that focuses on the development and validation of instruments [8], conducted in the city of Mossoró, Rio Grande do Norte, from September to December 2015. This study includes some of the theoretical steps proposed by Pasquali [7]. The healthcare needs of people with disabilities were initially selected as the construct. The following step was a literature review on the healthcare needs of PWD, which was complemented with the theoretical assumptions of the taxonomy of healthcare needs proposed by Matsumoto and Cecílio [8] based on the following attributes: 1) Need to respond to bad living conditions; 2) Guaranteed access to all the technologies that improve and prolong life; 3) Need to establish ties with a health worker or team; 4) Need for autonomy and self-care in the mode choice "living by moving".

Subsequently, the constructive and operational definitions of the attributes were created according to literature and the experience of researchers, as follows: 1) "physiological" needs such as food, sa-

nitiation, and housing; “complex” needs such as security and accessibility to affection; 2) needs related to access to soft technologies (relational skills), hard and soft technologies (programmable actions and practices), and hard technologies (equipment, infrastructure); 3) ties between users, the community, the team, and a professional; 4) autonomy of the subjects through the reconstruction and resignification of the meaning of life and way of life, including the struggle to satisfy needs [8].

These results were used to create the items of an instrument in a way that was clear and accessible for PWD. **Figure 1** below shows the items of a sociodemographic questionnaire with three dimensions and the instrument itself, named Instrument for Assessing the Healthcare Needs of People with Disabilities (IANS-PcD), subdivided into four areas.

In this study, the contributions of content validity [7] were associated with the Delphi technique [9]. The Delphi technique is a method of collecting opinions from judges with vast experience on the issue at hand, and who must prove their care/clinical experience in the public domain and teaching/research and scientific production in relation to the subject, which in this case, was persons with disabilities [9].

The experts were identified by means of exhaustive and advanced subject-based searches in the Lattes Platform. The authors of this study searched for specialists who met the following selection criteria: holder of a master's or doctoral degree in health; master's dissertation or doctoral thesis on subjects related to people with disabilities; published work on this theme; member of groups and/or research projects involving the theme; professor of the disciplines that address subjects related to disabilities; and at least one year of professional experience in healthcare for persons with disabilities. Health professionals who only worked with persons with mental deficiencies or who had not published papers on the subject for more than five years from the date of recruitment were excluded from the selection process.

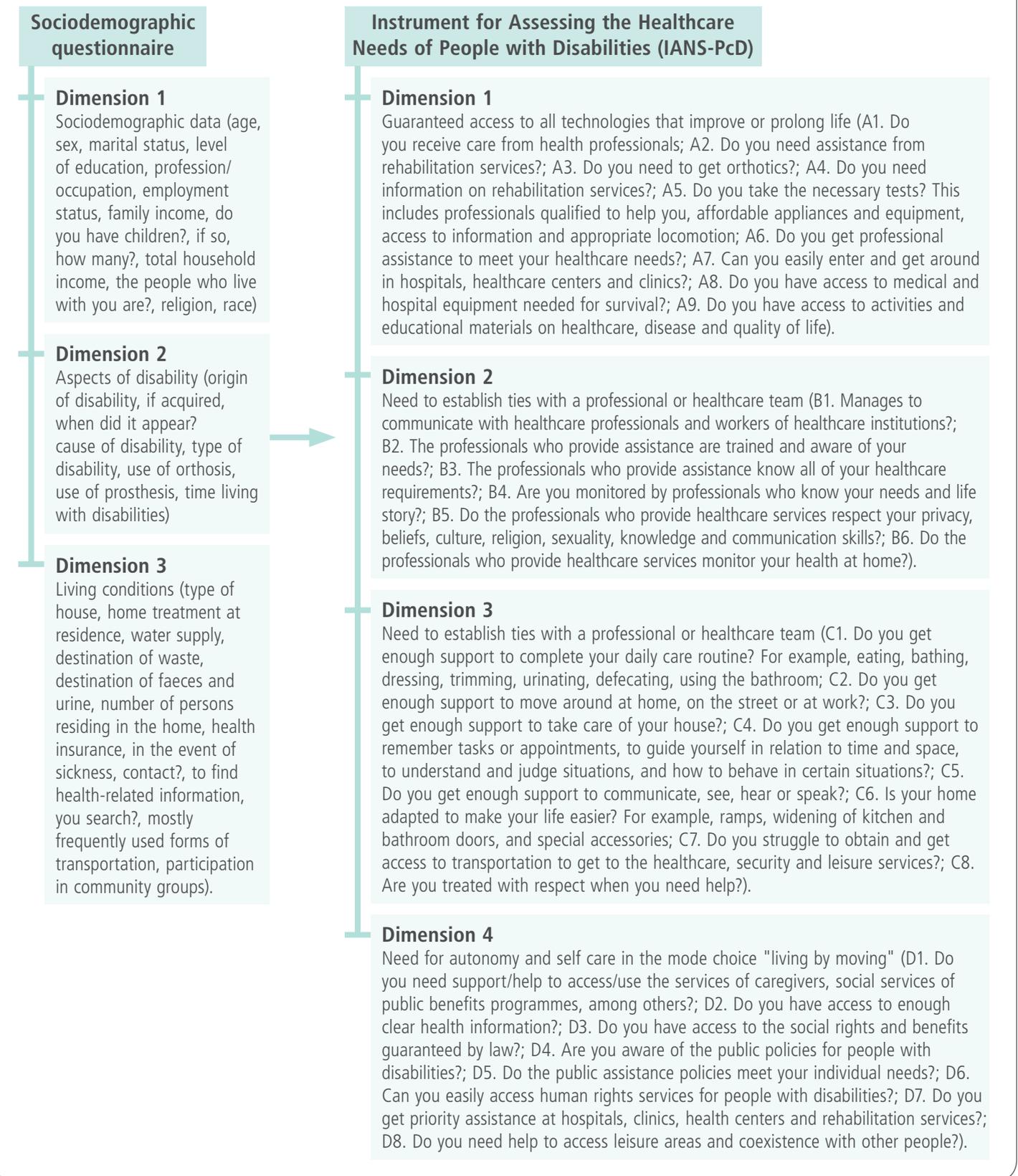
After selection based on the inclusion and exclusion criteria, 60 specialists were eligible to participate in the study. These professionals were contacted via e-mail to explain the purpose of the judge's participation in the research and to invite them to participate using a letter with a link to the study and a form created using Google Docs®. The authors of this study used their experience [10-11] in virtual platforms to collect research data and to send the preliminary version of the IANS-PcD to the selected judges.

The study was resubmitted every 07 days. If there was no answer, a new invitation was sent to the non-respondents until the desirable limit was reached (31 specialists), which was calculated using finite populations. The judges were provided with a field for suggestions to improve the instrument, add or remove items and dimensions, correct spelling mistakes, add queries, and other comments. The aim of this field was to broaden the scope of the instrument and include needs that had been overlooked when the original instrument was created.

A total of 33 specialists participated in the first Delphi round, and 18 specialists participated in the second round. These specialists assessed the content of each item and marked the option to agree or disagree with the inclusion of the item in the instrument.

The data obtained using the Content Validity [8] strategy were analysed using the Content Validity Index (CVI) [12] regarding the content of the items and the instrument in relation to representativeness. To calculate the CVI, the number of judges who marked the option to agree with the item was divided by the number of judges who assessed the item (CVI for each item); the number of judges who marked the option to agree with the item was divided by the number of judges who assessed the dimension (CVI for each dimension); and the number of judges who marked the option to agree with the item was divided by the number of judges who assessed the instrument (CVI of the instrument). An approval index over 80% (0.8) [7-9] was considered

**Figure 1:** Dimensions of the Content Validity of the Instrument for Assessing the Healthcare Needs of People with Disabilities (“IANS-PcD”).



valid when processing the judges assessments and in relation to the relevance of the items, the dimensions, and the instrument as a whole. It should be noted that the items that did not reach a CVI > 0.8 in the first Delphi round were reformulated or deleted.

In addition to the precision measurements, the authors verified the performance of the Delphi rounds I and II, of the dimensions, and of the instrument as a whole using the Mann-Whitney U test [13], considering the confidence intervals at 95% (p<0.05). Also, each criteria of usefulness/relevance, consistency, clarity, objectivity, simplicity, feasible, update, precision and instructional sequence [8] was evaluated using a quantitative scale that ranged from 0 to 10 described using mean and standard deviation with a significance level of 5% (p<0.05). The trustworthiness of the instrument was calculated using internal consistency, specifically Cronbach's alpha [14].

The collected data were added to an electronic database, analysed using the base SPSS programme for Windows 20.0, and presented using tables with relative frequencies and the values of the statistical tests.

This study was approved by the human research ethics committee [15] of the Universidade Federal do Rio Grande do Norte, under CAAE #39639014.3.0000.5537.

## Results

**Table 1** shows that most of the judges are nurses, both for Delphi round I with n=33 (42.4%) and for Delphi round II with n=18 (44.4%).

With regard to the time providing care for PWD, most of the participants selected 10 years or more in the Delphi I round (63.6%), while in the Delphi II round half the judges (50%) claimed to have worked for up to 10 years and the other half (50%) stated 10 or more years. In relation to the work sector, teaching prevailed in the Delphi I round

**Table 1.** Distribution of the domains and facets of QoL. João Pessoa, PB, 2015.

Profile of the interviewees	Delphi I		Delphi II	
	n = 33	%	n = 188	%
Age group				
Up to 40	19	57.58	11	61.11
Over 40	14	42.42	7	38.89
Marital status				
Married/Consensual union	24	72.73	13	72.22
Single	9	27.27	5	27.78
Professional Training				
Nurse	14	42.42	8	44.44
Physical therapist	5	15.16	2	11.11
Physical educator	4	12.12	2	11.11
Occupational therapist	4	12.12	2	11.11
Physician	3	9.09	2	11.11
Dental surgeon	1	3.03	1	5.56
Nutritionist	1	3.03	1	5.56
Psychologist	1	3.03	---	---
Work sector (multiple response)				
Teaching	29	87.88	16	88.89
Rehabilitation	8	24.24	4	22.22
Outpatient care	3	9.09	2	11.11
Home care	2	6.06	1	5.56
Elderly care	1	3.03	---	---
Nutritional therapy	1	3.03	---	---
Work inspection	1	3.03	1	3.03
Research	1	3.03	1	5.56
Hospital	1	3.03	1	5.56
Gerontology	---	---	1	5.56
Reasons for working with people with disabilities (multiple response)				
Affinity	28	84.85	11	61.11
Research line	7	21.21	3	16.68
Specialisation	3	9.09	4	22.22
Past experience with intellectual disabilities	2	6.06	1	5.56
Chance	1	3.03	1	5.56
Institutional demands	1	3.03	---	---
Methods of preparation (multiple response)				
In practice	19	57.58	10	55.56
Master's degree	16	48.48	8	44.44

Profile of the interviewees	Delphi I		Delphi II	
	n = 33	%	n = 188	%
Methods of preparation (multiple response)				
Refresher/Training	14	42.42	8	44.44
Doctoral degree	14	42.42	8	44.44
Specialisation	10	30.3	3	16.67
Research line	5	15.15	4	22.22
Education	2	6.06	---	---
Family experience	1	3.03	---	---
Don't feel prepared	2	6.06	---	---
Time providing care for people with disabilities				
Up to 10 years	12	36.36	9	50.00
10 years or more	21	63.64	9	50.00
Do you feel prepared to assist people with disabilities?				
Yes	27	81.82	13	72.22
No	6	18.82	5	27.78
Total	33	100	18	100

(87.8%) and in the Delphi II round (88.8%), followed by rehabilitation in Delphi I (24.2%) and in Delphi II (22.2%) .

**Table 2** shows that most of the judges' responses in relation to the agreement and representativeness of assessment items of the sociodemographic questionnaire of the IANS-PcD and the set of items of each dimension reached a CVI of over 0.8 (n = 57) in Delphi I. In Delphi 2, all the items of the sociodemographic questionnaire, the IANS-PcD, and the item set obtained a CVI of over 0.8 (n = 62).

It should be noted that although the CVI indicates valid content in Delphi I, the instrument was reformulated and a new format was sent for a new assessment in a second round of reviews.

In relation to the sociodemographic questionnaire, in Delphi I, the judges' suggestions were ob-

**Table 2.** Agreement of the judges with respect to items and dimensions of the instrument for identifying the healthcare needs of people with disabilities, based on the CVI.

Dimension	Items	CVI		CVI-D*		Mann-Whitney U Test P-value	CVI-I **	
		Delphi I	Delphi II	Delphi I	Delphi II		Delphi I	Delphi II
Sociodemographic data	Age	0.97	1.00	0.94	0.98	0.259	0.91	0.97
	Sex	1.00	1.00					
	Marital status	0.94	1.00					
	Level of education	1.00	1.00					
	Profession	0.97	1.00					
	Work status	0.94	0.94					
	Family income	0.76	1.00					
	Number of children	0.88	0.89					
	Total income	0.70	---					
	People who live with you	0.70	---					
	Religion	0.70	0.83					
	Race	0.70	---					
Aspects of disability	Origin of disability	0.82	1.00	0.94	0.98	0.259	0.91	0.97
	How the disability was acquired	1.00	1.00					
	Cause of disability	0.97	0.94					
	Type of disability	1.00	1.00					
	Use of orthosis	0.94	1.00					
	Use of prosthesis	0.94	1.00					
	Time living with disability	0.91	0.89					

Dimension	Items	CVI		CVI-D*		Mann-Whitney U Test	CVI-I **	
		Delphi I	Delphi II	Delphi I	Delphi II	P-value	Delphi I	Delphi II
Living conditions	Type of house	0.94	0.94	0.87	0.95	0.002	0.91	0.97
	Home water treatment	0.88	0.89					
	Home water supply	0.79	0.89					
	Destination of waste	0.82	0.89					
	Destination of faeces	0.76	---					
	Number of people living at home	0.91	1.00					
	Health insurance	0.91	0.94					
	Disease	0.82	0.94					
	Communications channels	0.88	1.00					
	Information channels	0.85	1.00					
	Means of transportation	0.97	1.00					
	Participation in community groups	0.88	0.94					
	Instrument for Assessing the Healthcare Needs of People with Disabilities ("IANS-PcD")							
Domain 1	A1	0.97	1.00	0.94	0.99	0.011		
	A2	0.97	1.00					
	A3	0.97	1.00					
	A4	0.91	1.00					
	A5	0.94	1.00					
	A6	0.97	0.94					
	A7	0.94	1.00					
	A8	0.82	0.94					
	A9	---	1.00					
Domain 2	B1	0.97	1.00	0.92	0.95	0.247		
	B2	0.94	1.00					
	B3	0.91	0.89					
	B4	0.88	0.94					
	B5	0.91	0.94					
	B6	---	0.94					
Domain 3	C1	1.00	1.00	0.97	0.98	0.336		
	C2	0.97	1.00					
	C3	1.00	1.00					
	C4	0.91	1.00					
	C5	0.97	1.00					
	C6	0.97	1.00					
	C7	0.97	0.94					
	C8	---	0.89					

Dimension	Items	CVI		CVI-D*		Mann-Whitney U Test	CVI-I **	
		Delphi I	Delphi II	Delphi I	Delphi II	P-value	Delphi I	Delphi II
Instrument for Assessing the Healthcare Needs of People with Disabilities ("IANS-PcD")								
Domain 4	D1	0.94	1.00	0.95	0.97	0.536		
	D2	0.97	0.94					
	D3	1.00	1.00					
	D4	0.94	0.94					
	D5	0.88	0.94					
	D6	0.97	0.94					
	D7	0.97	1.00					
	D8	---	1.00					

\*CVI-D: content validity index of dimension/domain. \*CVI-I: content validity index of the instrument

served and all the items had a CVI of under 0.8 or were reworded (family income; religion; Home water supply) or removed (the people who live with you are?; Race; Destination of faeces). All the items of the IANS-PcD obtained a CVI of over 0.8 in Delphi I. The suggestion of adding items to the domains was also observed (A9; B6; C8; D8), and they all reached a CVI of over 0.8 in Delphi II.

In Delphi I, the CVI-D was above 0.8 in all the dimensions of the sociodemographic questionnaire and domains of the IANS-PcD. After observing the suggestions of the experts, the CVI-D improved in all the assessed dimensions and domains.

The Mann-Whitney U test revealed a statistical significance for the dimensions sociodemographic data ( $p = 0.003$ ) and living conditions ( $p = 0.002$ ) of the sociodemographic questionnaire. In the IANS-PcD, domain 1 ( $p = 0.011$ ) showed a statistical significance. The indexes increased in the other dimensions of the sociodemographic questionnaire and in other areas of the IANS-PcD, although there was no statistical significance.

The CVI of the instrument as a whole was over 0.9, both in Delphi I (0.91) and in Delphi II (0.97), which shows a statistical significance ( $p = 0.017$ ). These findings mean that the content of the instrument can measure the items it proposes to measure, as shown in **Table 3**.

As regards the average assessment requirements of the instrument as a whole, there was a varia-

**Table 3.** Descriptive statistics on various aspects of the instrument for assessing the healthcare needs of people with disabilities.

Dimensions	Delphi I		Delphi II		p-value
	Average	Standard deviation	Average	Standard deviation	
Utility/relevance	8.67	1.05	9.33	0.77	0.026*
Consistency	8.39	1.46	9.06	1.00	0.126
Clarity	8.24	1.85	8.83	1.34	0.280
Objectivity	7.97	2.19	8.83	1.82	0.100
Simplicity	7.91	2.32	8.72	1.99	0.156
Feasibility	8.73	1.68	9.06	1.92	0.178
Update	8.79	1.17	9.17	1.15	0.186
Precision	8.21	1.87	9.00	1.28	0.121
Instructional sequence of topics	8.76	1.62	9.22	1.00	0.336
Overall assessment	8.42	1.25	9.17	0.99	0.031*

tion of 7.91 to 8.79 in the Delphi I round, with an overall average of 8.42. In the Delphi II round, the average of all the categories was over 8.72, with a variation of 8.72 to 9.33 and an overall average of 9.17. All the items obtained the best averages in the second evaluation, with statistical significance ( $p = 0.026$ ) in the requirement utility/relevance and overall assessment of the instrument ( $p = 0.031$ ). Finally, Cronbach's alpha calculations were 0.884 in the Delphi I round and 0.825 in the Delphi II round,

which indicates that the instrument has an internal consistency.

## Discussion

The aim of identifying healthcare needs is to enable resolute and quality interventions that can positively change the health conditions of individuals, their families and the community [16]. In the area of health, there are no known validated instruments that assess the healthcare needs of people with disabilities, which can hinder the provision of quality healthcare for this population.

To obtain this validation, a team of experts in a particular field of knowledge is selected to improve and legitimise a new instrument that is under development [7]. The participants of this study were healthcare experts from all regions of Brazil who are known for their work in the fields of healthcare, education and research, which demonstrates their technical and scientific knowledge and strengthens the results of this study.

These experts provided their opinions on the validity of the instrument in two rounds, until a consensus was reached. It should be noted that after the first Delphi round, items that did not obtain the adopted CVI were removed; the suggested alterations were made after referring to literature; and a new instrument was submitted to the judges with the alterations, feedback and support to complete the second round. In the second Delphi round, the CVI for the items, dimensions, and instrument as a whole improved and exceeded 0.80 for representativeness of the measure. This value also surpasses the standard defined in literature [7-9], which oscillates between 0.50 and 0.80 to define consensus and the consequent validation of an instrument. These results show the robustness of this study and the quality of the validation process of the sociodemographic questionnaire and the IANS-PcD.

It should be noted that most of the responses were positive for all the items of the IANS-PcD, su-

ggesting that the experts understood all the items of the instrument, and that, consequently, the content of the instrument can potentially be understood by people with disabilities. This finding is important since the authors sought to use concepts of the taxonomy of healthcare needs [8], which addresses a vision of these needs that go beyond the need for medical consultations, diagnostic tests and rehabilitation [7].

All the judges agreed with the importance of maintaining the four domains of the instrument and did not show any interest in creating new domains, although that possibility was offered by the researchers. This shows that the judges agreed that the domains are all-inclusive and cover the objectives proposed by the instrument, which is to assess the different healthcare needs of PWD according to different ways of living [16]. Four items were added, one in each dimension, to strengthen the domains that were already part of the instrument.

Domain 1 was well evaluated, with very good agreement levels (7.9). The judges ratified that the dimension can be used to assess needs related to good living conditions because the health issues included in the dimension also address specific aspects of disability. A study recommends that PWD be identified and assisted by the health services used by all citizens, without restrictions, since they have demands that are unrelated to their disabilities and therefore need the same assistance as any other citizen [16].

In relation to domain 2, which addresses the need to establish close ties, the judges assessed this dimension as very important since these needs are often overlooked or ignored. A study on the needs of persons with disabilities found that professional-patient interaction is one of the most relevant healthcare needs of this population [16]. Access to healthcare professionals and innovative technologies and equipment does not guarantee that the needs of PWD will be met if they are not accompanied by effective information, relationships of trust

and respect, and the establishment of ties [17].

Domain 3, which addresses the technologies that improve or prolong life, introduces the importance of equipment such as orthotics and prosthetics for PWD. Studies [18-19] indicate that these aids allow autonomy, independence and dignity, which was corroborated by the judges, who assessed the dimension as very important, and demonstrated by the high CVI.

Domain 4, which addresses the need for autonomy and self-care in the mode choice "living by moving", was highly approved by the judges. The judges justified the importance of this dimension by claiming that it helps assess the needs of PWD as citizens with rights without overlooking their special needs. A study conducted in the capital of north-eastern Brazil found that public policies support the inclusion of PWD and that the creation and implementation of policies guarantee the social rights of this population [20].

The IANS-PcD enables the evaluation and the subsequent identification of the most important healthcare needs, such as those related to the need for technologies that guarantee, prolong or improve the life of PWD, those of a more subjective character related to the patient-health worker bond, and those of a social nature. This characteristic confines the instrument as an innovative technology and complies with the Presidential Decree 7508/2011, which regulates Law 8080/1990, by placing the identification of local and regional healthcare needs as a key provision to execute contracts that will mediate agreements between bodies of the Federation for the organisation of health services [21].

In relation to the internal consistency of the instrument, despite the slight reduction from 0.884 in the first round to 0.825 in the second round, the level of internal correlation between the items was considerably good, which corroborates the findings of literature that considers Cronbach's alpha values between 0.8 to 0.9 as indicative of good internal consistency [22].

Thus, the assessment of the experts endorsed the sociodemographic questionnaire and the IANS-PcD as an instrument of valid content and good reliability that manages to systematically assess the healthcare needs of PWD and provide a more realistic evaluation of these needs, and consequently contribute to a better health plan that meets the needs of PWD. The authors stress the legitimacy of the frequencies of the expert responses on the psychometrics criteria of the IANS-PcD, which reached more than above-satisfactory values.

Finally, it is important to note that the IANS-PcD includes specific aspects of healthcare, but it also covers other dimensions, which indicates the importance of comprehensive and intersectoral actions and shows how the instrument fully identifies and assesses the healthcare needs of PWD.

## Conclusion

The final version of the instrument based on the taxonomy of healthcare needs consists of a socio-demographic questionnaire with three dimensions and 28 items, and the IANS-PcD consists of four domains with 31 items. In Delphi I, the CVI index was above 0.8 in most items, in all dimensions and domains, and in the instrument as a whole. The Delphi II round showed an improvement of all the scores of the dimensions and domains, and scores of the instrument as a whole.

With regard to the average of the requirements of the assessment instrument, the scores of the judges in the second Delphi round were higher in all the evaluated items, which indicates that the experts considered the instrument valid. Statistical analysis with Cronbach's alpha above 0.8 consolidated the internal consistency of the tool for assessing the healthcare needs of people with disabilities.

The Delphi technique was used to determine the feasibility of this study because it is flexible, reliable and, above all, because it values the opinions and knowledge of the experts involved. The

limitations of this study were incorrect email addresses in the Lattes platform, which prevented contact with the experts; loss of professionals in the second assessment round; and limitations of the researcher regarding the Google docs tool, which could have caused some doubts regarding form completion.

The instrument should be subjected to other levels of evaluation, such as appearance validity, and the psychometric aspect of the validation that measures whether the questionnaire is suitable for the intended field should also be addressed.

It is therefore concluded that this contribution to assess the healthcare needs of people with disabilities can guide health planning and can be considered an innovation in the context of health planning and care for this population. The results can help increase knowledge on the subject, however, the proposed assessment instrument only covers the healthcare needs of people with physical, hearing and visual disabilities, and is therefore not recommended for people with other types of disabilities.

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