



Development and content validation for a self-assessment instrument of care quality in long-term care facilities for older adults

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Abstract

Objective: To develop and validate the content of a self-assessment instrument for the quality of care in Long-Term Care Facilities for Older Adults (Instituições de Longa Permanência para Idosos - ILPIs), named QualificaILPI. **Method:** A methodological study conducted between March and December 2021. The instrument was developed based on a multidimensional quality model, Brazilian legislation, and literature research. It contains quality standards for self-assessment of ILPIs in the dimensions of environment, home, care, family and community involvement, work team, and management. Each standard is described and followed by a scale with parameters to classify the level of ILPI quality as incipient, intermediate, or consolidated. The modified Delphi Technique was employed for validation by a committee of 10 experts regarding the relevance of the standard for ILPI quality assessment, the appropriateness of objectives, the evaluation scale, and clarity, allowing for comments. The standard was retained when there was 75% agreement among the experts. The instrument was also evaluated by the target audience, consisting of coordinators from 10 ILPIs selected for convenience. **Results:** In the first assessment cycle, three standards were excluded, and two new ones were created. In the second cycle, the dimension of one standard was changed, and two standards were combined. In the end, 29 standards remained, divided into six dimensions. The target audience, ILPI managers, suggested changes in the wording of some standards. There was a consensus of 80% or higher for all standards. **Conclusion:** QualificaILPI has the potential to contribute to monitoring ILPIs, promoting the improvement of care offered to residents.

Keywords: Delphi Technique. Long-Term Care. Aged. Self-Assessment. Quality of Healthcare.

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INTRODUCTION

The aging process may be accompanied by an increased need for assistance in daily activities. When families are unable to provide this support, Long-Term Care Facilities for Older Adults (Instituições de Longa Permanência para Idosos - ILPIs) become alternatives to deliver such care. ILPIs are collective residential settings, whether governmental or private, that provide healthcare assistance and activities aimed at maintaining clinical and functional conditions¹. There is a global trend of an increase in this type of residence², with the number varying according to the country and local culture. The population residing in such institutions constitutes approximately 0.5% of the older population in Brazil, 9% in the United States, and 6% in France³.

Factors contributing to the use of these residences include the dependence of older individuals, financial difficulties within the family, absence of a caregiver at home, changes in family dynamics due to all family members working, and family conflicts⁴. As it is not a natural process, the transition to a collective living environment can negatively impact the lives and health of older individuals⁵. In this perspective, ILPIs should develop initiatives that promote the well-being and quality of life of older adults, encouraging the maintenance of cognition, independence, and physical capacity⁶.

To ascertain whether these initiatives are being implemented, the assessment of ILPIs has become an encouraged and recognized practice in many countries, contributing to the implementation of social policies⁷. In Brazil, legislation regulates the operation of ILPIs, defining minimum standards for organization, human resources, infrastructure, operational processes, health, food, cleanliness, laundry, clothing processing, and storage^{8,9}. The health surveillance conducts external evaluation processes with the objective of inspection, in accordance with established norms. However, systematic internal evaluation processes that facilitate the identification of issues, planning, and decision-making by those involved in the daily care of older adults have not been identified^{9,10}.

The assessment of ILPIs is a complex issue that must be theoretically conceptualized and guided.

One of the many existing tools for evaluation, called "Observable Indicators of Nurse Home Care Quality", utilizes the Integrated Multidimensional Model of Quality and Person-Centered Care and contains seven quality dimensions¹⁰. However, for the most part, these tools either do not employ a conceptual model, are not specifically designed for ILPIs, or do not incorporate the perceptions of older adults, staff, managers, and family members in a comprehensive assessment¹⁰.

For a comprehensive evaluation, it is presupposed that tools supporting the assessment process should be utilized. This process should be conducted continuously by individuals closely associated with the ILPI to enable care planning and improvements in structure and work processes. In this context, the aim of this study was to develop and validate the content of a self-assessment instrument for care quality in ILPIs based on a multidimensional assessment model.

METHOD

This is a methodological study conducted between March and December 2021, aimed at creating and validating the content of a self-assessment instrument for care quality in ILPIs, named QualificaILPI. The stages of its development are illustrated in Figure 1. In its construction, models of care quality in ILPIs and Brazilian legislation were taken into account, in addition to a literature review.

The adopted conceptual models were the ILPI quality model developed by Figueiredo et al.¹¹ and the multidimensional quality model of care in ILPIs by Rantz et al.¹². Figueiredo et al.¹¹ defined ILPI quality as related to the environment, provided care, team and work processes, status, family, and community through qualitative research using unstructured interviews. According to Rantz et al.¹², care quality is multidimensional, encompassing aspects related to the team, care, family involvement, communication, environment, domicile, and cost. The theoretical model of Donabedian¹³ was also employed for health service evaluation to define the work process and structure to be assessed by the instrument. The structure involves material, human, and organizational resources that favor work

processes related to care activities¹³. These models were chosen based on a scoping review of existing models to guide ILPI care evaluation¹⁰. Additionally, the legal framework used was Resolution of the

Collegiate Board, number 502, dated May 27, 2021 (Resolução de Diretoria Colegiada - RDC 502/2021), from the National Health Surveillance Agency, which governs the operation of ILPIs⁸.

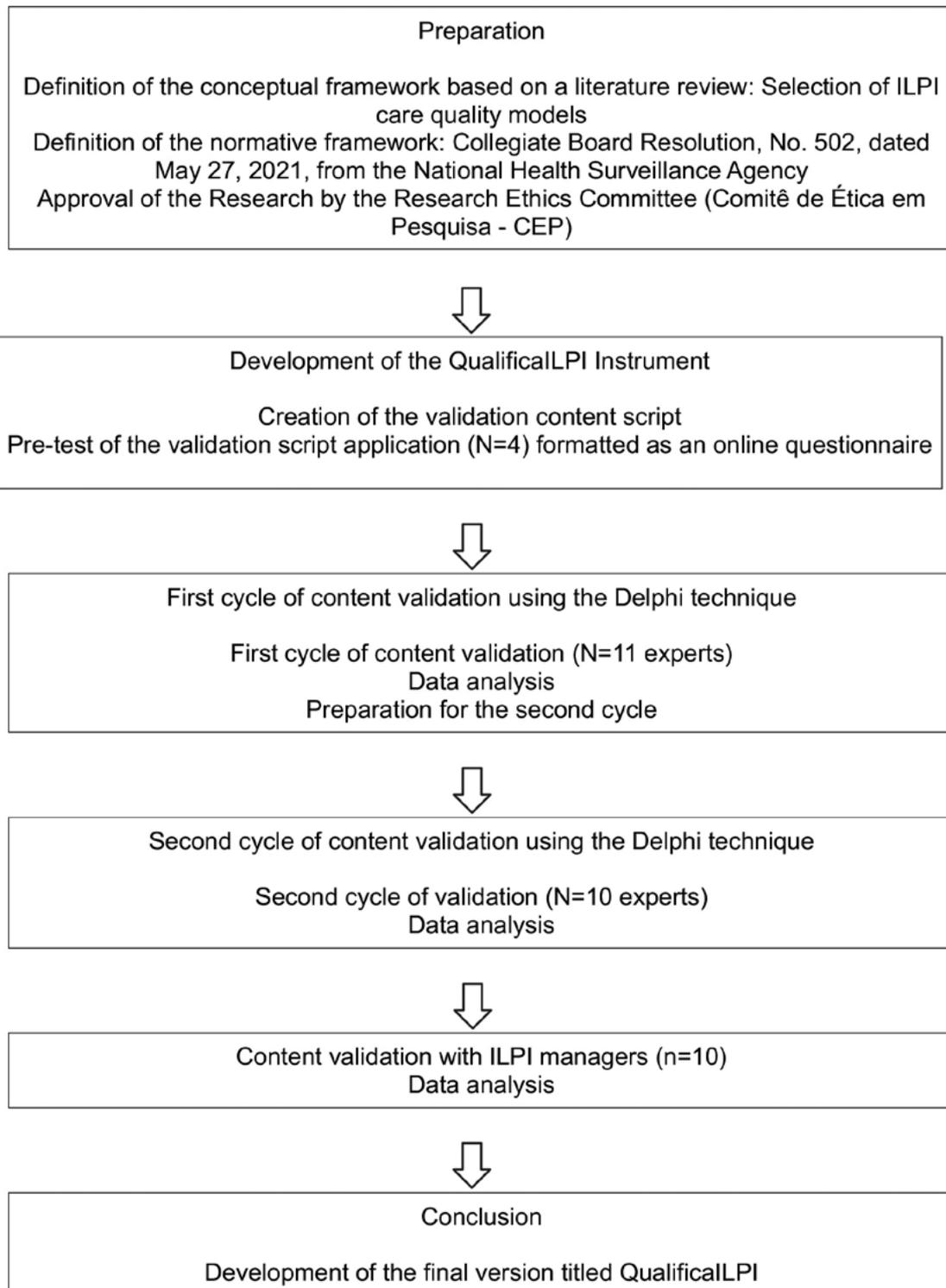


Figure 1. Stages of content validation for the self-assessment instrument of care quality in ILPIs (QualificaILPI). Belo Horizonte, MG, 2021.

The instrument comprises quality standards, defined based on literature or legislation, related to the structure and work processes in the dimensions of environment, work team, care, home, family and community involvement, and management of the ILPI. The concepts of these dimensions are presented in Chart 1. For the assessment of each standard, there is a scale to indicate its level of quality, ranging from absent, incipient, intermediate to consolidated. This

scale varies for each standard. The criteria used for constructing the scale were based on previous studies or referenced the Brazilian legal framework. Statistical criteria, quartiles, and terciles were employed when none of the conditions were available. The instrument was presented in a descriptive sheet containing the conceptualization of the assessed quality dimension, a description of each developed standard, objectives, justification, and a self-assessment scale.

Chart 1. Concepts of the dimensions evaluated by the self-assessment instrument of care quality in ILPIs. Belo Horizonte, MG, 2021.

Dimensions	Concepts
Environment	The concept of environmental docility was employed, referring to friendly spaces resulting from the provision of compensatory physical and psychosocial resources to promote the physical health, functionality, safety, residence identity, and psychological well-being of the resident. As the individual's abilities decline, and behavior becomes dependent on external factors, it becomes necessary to enhance the resident's environment to enable a more dignified, secure, and well-being-centered living experience ^{7,14} .
Work Team	It pertains to the team of professionals involved in providing care to older adults residing in ILPIs. It is essential to consider the technical requirements for each professional category, ensure the minimum number of professionals, establish ongoing education, and enhance the work process to ensure professional satisfaction and, consequently, better meet the needs of the residents ^{10,14,15} .
Care	Care encompasses any action aimed at meeting the basic needs of older adults, including promoting self-care, self-esteem, and self-appreciation. ILPIs should consistently care for older adults with respect and attentive listening, empathy, and encouragement of autonomy and independence whenever possible. Care is crucial for the quality of life and survival of older adults ^{14,15} .
Home	Older adults residing in ILPIs should feel as if they are in their own homes. With a welcoming environment, ILPIs should preserve habits, autonomy, safe social interaction, hygiene, health, accessibility, and privacy. When this occurs, the older adults perceives the staff as friends and family, feeling at home, participating in ILPI activities with freedom and privacy ^{14,16} .
Family and Community Involvement	The ideal scenario is to maintain older adults in their own family environment, but if that is not possible, a collective home is an option. Nonetheless, it is essential to maintain involvement with family and the community, promoting autonomy and quality of life. This interaction helps to preserve mental health, satisfaction, and independence ^{10,17} .
ILPI Management	The management of the ILPI encompasses administrative processes aimed at achieving outcomes, ensuring a better quality of life for older adults, based on regulations that must be followed and established by legislation ^{10,18} .

ILPI: Instituições de Longa Permanência para Idosos (Long-Term Care Facilities for Older Adults).

The instrument was initially subjected to a pre-test by four experts (faculty members in the field of geriatric health) to assess the adopted format, dimensions and their self-assessment standards, language, and potential inconsistencies.

A modified Delphi Technique¹⁴ was then used to validate the content of the self-assessment instrument, based on the Guidance on Conducting and Reporting Delphi Studies (CREDES)¹⁹. This technique involves an interactive consultation with experts who assess specific issues or subjects in evaluation cycles until consensus is reached. It was conducted through an anonymous structured group methodology, allowing the accumulation of contributions from experts with different experiences, ranging from research to frontline care for older adults. The experts were selected for their affinity with the topic and experience in elderly care¹⁴, including workers in ILPIs, researchers, or members of associations/institutions related to the research or protection and assistance of the elderly: Brazilian Society of Geriatrics and Gerontology (1), National Health Surveillance Agency (1), nurse managers from the Municipal Health Department (2), university professors (2), workers from the State Older Adults Coordination (2), and caregivers of older adults in ILPIs: occupational therapist (1), nutritionist (1), lawyer (1), and physiotherapist (1).

The validation script allowed experts to assess each standard of the self-assessment instrument regarding its relevance:

- 1) "Is the standard relevant for evaluating the quality of the ILPI?"
- 2) "Is the standard relevant for evaluating the proposed dimension?"

To answer these two questions, the experts chose one of the following options: the standard is indispensable, necessary, or dispensable. The experts also provided their opinions on the following questions: "Is the wording of the standard suitable for understanding its content?"; "Is the objective of the standard adequately described?"; and "Is the proposed rating scale suitable for measuring different levels of ILPI quality in terms of the evaluated standard?" The

experts selected one of the options: suitable, partially suitable, or unsuitable. Additionally, two open-ended questions allowed the experts to provide a wording suggestion to enhance clarity and understanding of the content or any other comments or suggestions regarding the standard.

The self-assessment instrument, validation script, and informed consent form were distributed to experts through an online Google Forms platform following their agreement to participate, which was previously confirmed through telephone contact. The obtained responses were analyzed and consolidated, generating an anonymous report provided in subsequent evaluation cycles, along with the self-assessment instrument revised based on received comments. Standards were retained in the instrument when a concordance rate of at least 75% among the experts was achieved²⁰, for all evaluated aspects. The percentage was calculated by the frequency of experts who responded positively (answer options: indispensable + necessary or suitable + partially suitable) to the aspects evaluated for each standard, separately.

Following this stage, the QualificaILPI instrument was printed and sent to ten managers of ILPIs, selected conveniently from five philanthropic and five private ILPIs, as potential users of the instrument. They were asked to assess the clarity of the standards, the utility of self-assessment for the ILPI, and whether the scale was suitable for differentiating the level of care quality in the ILPI. To assess clarity and scale adequacy, the options were yes or no. For utility, managers chose one of the following response options: always, sometimes, rarely, or never. When managers negatively assessed any aspect, they were asked to provide a justification for that evaluation. Additionally, there was space for comments and suggestions. Similarly, the percentage of agreement among managers on these issues was obtained by the frequency of those who responded positively (yes or sometimes + always).

The study was approved by the UFMG Research Ethics Committee (CAAE: 17002519.4.0000.5149) and all experts recorded their acceptance to participate in the research after reading the informed consent form.

The entire dataset supporting the results of this study is in another document, previously published and available at: <http://hdl.handle.net/1843/47720>²¹.

RESULTS

The initial version of the self-assessment instrument comprised 35 standards that assessed aspects of the structure and work process in six dimensions: environment, work team, care, home, family and community involvement, and management of the ILPI.

Two validation cycles were necessary to achieve consensus among experts regarding the proposed standards for the instrument. After the first cycle, one standard from the environmental dimension was excluded due to a concordance percentage <75%. The need for an ILPI-owned car for transporting older individuals, assessed by this excluded standard, was considered inappropriate by the experts. In the work team dimension, the presence of different categories of healthcare professionals, such as those employed in ILPIs, was deemed unnecessary and even inappropriate, as the perception is that the ILPI should be more like a home. Therefore, it was excluded, along with three standards related to medical, psychological, and dental care provided by the ILPI. If an older individual requires any of these professionals, an appointment should be scheduled, which can take place either outside or within the ILPI. A standard was created that encompasses oral health care, not just the provision of dental treatment. The standards on monitoring the health of the older person by the caregiver and the need for their records were modified and merged. Resident participation in decisions within the ILPI was moved to the Home dimension. The standard addressing the involvement of volunteers in home activities was transferred to the Community Involvement dimension and merged with the standard encouraging family presence in the ILPI. The standard on gardening was incorporated into the Environmental dimension's green area and garden. Changes in the wording of various standards were also made based on expert comments.

In the second validation cycle, the percentage of agreement among experts exceeded 75% for all standards. The experts also suggested including the evaluation of the caregiver's profile and the quality of the technical course for caregivers of older adults conducted by them. Additionally, they suggested changes related to the COVID-19 pandemic. However, these issues go beyond the objectives of the self-assessment instruments. Evaluating the caregiver's profile requires specific knowledge, and the quality of the caregiver course is independent of the ILPI, as it is regulated by the Ministry of Education. Moreover, it was recommended to consider the extraordinary situation of the pandemic and adopt necessary changes as long as needed. Other suggestions regarding wording and content were accepted and enhanced the standards. The percentages of agreement among experts for the content validation aspects of the standards are presented in Table 1.

In the evaluation of the instrument by the target audience, the percentage of agreement among managers was above 80% for all aspects assessed and all standards. Managers considered that Standard 5 in Dimension 3 (Care) and Standard 3 in Dimension 6 (Management) would be "rarely" useful for ILPIs. Standard 5 refers to the prevention of violence, starting from the care dimension. The justification provided for this response did not consider violence as an expected situation within the ILPI, but it is known to exist and requires attention. The other standard evaluates the participation of managers and professionals from the health unit near the ILPI in the elaboration of the health plan. It was argued that this does not happen in the ILPI's daily routine, but it is a requirement of Brazilian legislation and should be encouraged as it promotes integration between the ILPI and health units. Regarding the adequacy of the evaluation scale, all standards obtained agreement above 80% (Table 2).

The final self-assessment instrument included 29 out of the initial 35 standards distributed across six dimensions (Table 3). The complete version of the QualificaILPI instrument, including scales and evaluation parameters, is available in the supplementary file: <http://hdl.handle.net/1843/47720> ²¹.

Table 1. Percentage of agreement among experts in the first and second validation cycles of standards in terms of relevance for assessing ILPI quality, relevance for dimension assessment, understanding, adequacy of the objective, and evaluation scale (number of experts in the first cycle: 11; in the second: 10). Belo Horizonte, MG, 2021.

Dimensions	Aspects evaluated by experts in the two validation cycles									
	Relevance of the standard for assessing the quality of long-term care		Relevance of the standard for dimension assessment		Proper understanding		Proper description of the purpose of the pattern		Proper scale	
	Cycle 1	Cycle 2	Cycle 1	Cycle 2	Cycle 1	Cycle 2	Cycle 1	Cycle 2	Cycle 1	Cycle 2
Environment										
Standards										
1	90.9	100	90.9	100	90.9	100	81.2	100	81.2	100
2	100	100	90	100	81,8	100	72.7*	100	63.6*	100
3†	100	90	100	90	100	100	100	100	100	100
4	100	100	100	100	100	100	100	100	100	100
5‡	72.8*		72.8*		72.8*		81.8		72.8*	
6	90.9	100	81.8	100	90.9	100	90.9	100	90.9	100
Work Team										
Standards										
1‡	90.9		90.9		100		100			
1	90.9	100	90.9	100	90.9	100	100	100	100	100
2	90.9	100	100	100	100	100	100	100	100	100
3	100	100	100	100	90.9	100	100	90	90.9	100
4	100	100	100	100	100	100	100	100	100	100
5	100	100	100	100	100	100	100	100	100	100
Care										
Standards										
1	100	100	100	100	100	100	100	100	100	100
2	100	100	100	100	100	100	100	100	100	100
3	90.9	100	90.9	90	90.9	100	90.9	100	100	100
4§	100	100	100	100	100	100	100	100	100	100
5	100	100	100	100	100	100	100	100	100	100
6	100	100	100	100	100	100	100	100	100	100
7	90.1	100	90.1	90	100	100	100	100	100	100
8	100	100	90.1	100	100	100	100	100	100	100
9° §	90.1		81.8		90.1				100	
10	100		90.1		100		100		100	
9	81.8	100	81.8	90	199	100	100	100	100	90
11‡	81.8		81.8		100		100		100	
12‡	90.1		90.1		100		100		100	
13‡	81.8		81.8		100		100		100	
9		100		100		100		100		100
10		100		90		100		100		90

to be continued

Continuation of Table 1

Dimensions	Aspects evaluated by experts in the two validation cycles									
	Relevance of the standard for assessing the quality of long-term care		Relevance of the standard for dimension assessment		Proper understanding		Proper description of the purpose of the pattern		Proper scale	
Environment	Cicle 1	Cicle 2	Cicle 1	Cicle 2	Cicle 1	Cicle 2	Cicle 1	Cicle 2	Cicle 1	Cicle 2
Home Standards										
1	90.9	90	90.9	90	90.9	90	90.9	100	81.8	100
2 **	100	90	100	90	100	100	100	100	100	100
3	90.9	90	90.9	90	100	100	100	100	100	100
4	81.8		81.8		100		100		100	
3 †		90		90		100		100		100
Family and Community Involvement Standards										
1 **	81.8	100	81.8	100	100	100	100	100	100	100
2	90.9	100	90.9	100	100	100	100	100	100	100
ILPI Management Standards										
1	100	100	100	100	100	100	100	100	100	100
2	100	100	100	100	100	100	100	100	100	100
3	81.8	90	81.8	90	100	100	100	100	100	100
4	100	100	100	100	100	100	100	100	100	100

ILPI: Instituições de longa permanência para idosos (Long-Term Care Facilities for Older Adults); * Percentage of agreement among experts <75%; † Part of the standard moved to another dimension (3 to 3); ‡ Excluded standards; § Standards merged in the same dimension (4 and 9); || Standard moved to another dimension (10 and 3); ** Standards combined in different dimensions (2 and 1).

Table 2. Percentage of agreement among ILPI managers (n=10) regarding the clarity of standards, their usefulness for self-assessment, and the adequacy of the scale to differentiate the quality of care in the ILPI. Belo Horizonte, MG, 2021.

Standards	Clarity of standards (%) Yes	Usefulness of self-assessment for ILPIs (% always and sometimes)		Adequacy of the instrument to differentiate the levels of quality of care in the ILPI (% yes)
		Always	Sometimes	
Aspects evaluated by managers				
Dimension 1: Environment				
1	100	100		90
2	100	100		80
3	90	100		100
4	100	80	20	100
5	100	80	20	90
Dimension 2: Work Team				
1	100	100		100
2	100	90	10	100
3	100	90	10	80
4	100	90	10	100
5	100	90	10	90
Dimension 3: Care				
1	100	90	10	90
2	100	90	10	100
3	100	80	20	90
4	100	90	10	100
5	100	80	20	90
6	100	90	10	100
7	100	80	20	100
8	90	90	10	90
9	100	90	10	100
10	100	80	20	100
Dimension 4: Home				
1	100	90	10	100
2	100	80	20	90
3	100	70	30	90
Dimension 5: Community Family Involvement				
1	100	80	20	100
2	100	80	20	90
Dimension 6: Management				
1	100	70	30	80
2	100	70	30	80
3	90	70	30	80
4	100	80	20	100

ILPI: Instituições de Longa Permanência para Idosos (Long-Term Care Facilities for Older Adults).

Table 3. Dimensions and aspects addressed by the quality standards of the self-assessment instrument for care quality in ILPI - QualificaILPI. Belo Horizonte, MG, 2021.

Standards	Dimension 1: Environment
1	Mobility and safety issues
2	Adequacy of bedrooms
3	Common area, green area, internet access
4	Appropriate location for medications
5	Cleanliness and hygiene (presence of odors)
	Dimension 2: Work Team
1	Adequate number of caregivers considering the resident's level of dependency
2	Technical supervisor
3	Caregivers with training courses
4	Continuous education
5	Team meetings
	Dimensão 3: Care
1	Proper nutrition
2	Technical standards and routines for food processing
3	Medical care plan
4	Individualized resident registry
5	Prevention of violence
6	Physical activities
7	Recreational and cultural activities
8	Occupational activities
9	Daily dental care, including denture cleaning
10	Healthcare
	Dimension 4: Home
1	Intergenerational activities
2	Consideration of resident preferences
3	Participation in household decisions
	Dimension 5: Family and Community Involvement
1	Encouraging family and community participation
2	Integration with educational institutions
	Dimension 6: Management
1	Use of indicators to monitor performance
2	Discussion of monitoring with collaborators
3	Public health participation in planning
4	Strategies to avoid professional turnover

DISCUSSION

The QualificaILPI instrument demonstrated content validity, as confirmed by experts, and was deemed clear and useful by managers and professionals in contributing to the self-assessment process of the quality of care in long-term care facilities for older adults. The validation process involving both experts and the target audience contributed to enhancing the quality of the developed instrument²⁰.

The number of experts involved and the validation cycles were conducted according to the description of the technique, recommending five to ten experts with a strong domain of the subject¹⁴. The consensus method allowed for the synthesis of information from experts who freely expressed their positions and impressions about the instrument under construction without the presence of others, reducing the risk of bias. Finally, modifications and necessary changes were suggested by all experts^{14,22}.

The QualificaILPI innovates as a self-assessment instrument that includes standards related to the participation of older adults in ILPI activities; the existence of partnerships with educational institutions and the involvement of people of all ages in the routine of ILPI, enabling intergenerational interaction; the inclusion of oral health care, which can prevent health issues; and the prevention of violence²¹. The standards encompass important aspects for the health, well-being, and quality of life of older adults. The need for ILPI to resemble a home was taken into account, without forgetting the importance of meeting the health and stimulation needs of older adults for the maintenance and recovery of their health.

The environmental dimension encompasses structural aspects that allow privacy, space for socialization, comfort, and safety, preventing accidents and favoring work processes, as seen in other studies^{12,23}. The work team dimension addresses ILPI workers, including caregivers, who must be trained and motivated, essential for quality care^{12,13,24}. The care dimension evaluates aspects such as nutrition^{6,25}, and physical activity, which is important for social interaction with other residents, maintaining health, and independence^{6,24,26,27}. It also includes the assessment of individualized care plans³,

preventing hospitalizations and maintaining oral health to avoid excess biofilm that may be related to respiratory pneumonia²⁸. Additionally, it aims to prevent violence, which can lead to negative psychological consequences affecting health and well-being¹⁶.

The home dimension aims to assess whether the ILPI is as close as possible to a home, ensuring that residents participate in some decisions, preserving their habits and autonomy, promoting health and well-being^{12,17}. The fifth dimension, family and community involvement, evaluates whether these relationships are being encouraged and allowed in the broadest possible way for better mental health and quality of life. Partnerships with educational institutions to increase social interaction and cognitive and physical stimulation should also be considered¹⁶, along with contact with people from other generations²⁹. The last dimension assesses management, which must be well-planned with adequate oversight for the functioning of the ILPI^{8,20,30,31}.

There are some limitations to consider in this study. Firstly, the Delphi technique does not allow face-to-face or group interaction among participants, limiting the exchange of information, although it promotes greater freedom and autonomy in assessments. Additionally, the lengthy duration of the validation process, which can extend over several months until all responses are obtained, is a challenge^{32,33}. Defining assessment scales was complex, as parameters for defining ILPI quality were not always available (in the literature or normative documents), and some were based on statistics. It is important to note that this study focuses exclusively on the content validation of the instrument by experts, while future research should evaluate its psychometric properties and dimensionality. Although differences in ILPIs in different contexts are acknowledged, the concepts adopted for defining quality can be broadly applicable, especially regarding elements such as family contact and the sense of belonging to a home. This self-assessment instrument, covering various dimensions, provides an opportunity for those responsible for the management and care of older adults to analyze various aspects of ILPI functioning and practices. This includes structural and management issues, teamwork, and the relationship

between ILPIs, older adults, and their families, as well as community involvement. The implementation of the self-assessment process allows for continuous monitoring of care quality, contributing to the well-being of all involved, in line with World Health Organization (WHO) recommendations emphasizing the importance of ILPI assessment^{21,31,34,35}.

CONCLUSION

The QualificaILPI self-assessment instrument demonstrated content validity and was deemed valuable for evaluating the level of care quality in ILPIs concerning multidimensional quality standards. This self-assessment tool stands as a potent and innovative resource that coordinators of ILPIs, managers, and professionals can deploy in various capacities. It facilitates ongoing monitoring of service quality within these institutions, serving as a guide in meetings with staff, managers, and residents, aiding in planning and decision-making. Self-assessment plays a pivotal role in contributing to continuous surveillance and monitoring. It can also highlight areas that could be enhanced to elevate the quality of care provided to older adults. The obtained results can be utilized for longitudinal comparisons over time, enabling an analysis of performance trends against established standards.

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AUTHORSHIP

- Bruno Luís de Carvalho Vieira – conception, design, data analysis and interpretation, paper writing, and critical revision; approval of the final version to be published.
- Arianne Correa Martins - data analysis and interpretation, critical revision, and approval of the final version to be published.
- Raquel Conceição Ferreira – conception, design, data analysis and interpretation, paper writing, and critical revision; approval of the final version to be published.
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