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Self-Assessment Tool in Soft Skills Learning During Clinical Placements in Physiotherapy Degree Programs: A Pilot Validation Study

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Abstract

Physiotherapy is challenged to be a profession with competencies in humanized skills and aptitudes. The need to integrate the learning of sustainable soft skills and humanistic education into higher education curricula has recently been emphasized to improve the capabilities of future healthcare professionals. Our objective was to psychometrically evaluate the Invisible Care, Well-being, Security, and Autonomy (CIBISA) scale in the context of physiotherapy through a pilot study involving students undertaking a degree in physiotherapy. The Delphi method was used over two rounds, and a focus group was convened to achieve a consensus on the adaptation of the CIBISA nursing scale to assess physiotherapy (CIBISA-F). For the psychometric validation of the CIBISA-F scale, the data-collection instruments used were the adapted CIBISA-F scale and two more validated scales related to soft skills. The scales were answered by 25 students at three different times, twice before the start of the clinical placements and once after. The results showed high internal consistency ($\alpha = 0.911$), adequate reliability according to a Brand–Altman plot, and an adequate construct validity and sensitivity in comparison to other tools. The results of the present study suggest that this version of the CIBISA-F scale is a useful and reliable tool for measuring humanization skills in healthcare and physiotherapy students during their clinical placements, ensuring high-quality education.

Keywords: healthcare; physiotherapy education; soft skills; psychometric validation; humanization; clinical placements

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1. Introduction

Physiotherapy, as a health profession, was created to care for people with health problems and is an occupation predicated upon humanized skills and aptitudes. Skills such as active listening, empathy, sensitivity, respect, and tolerance should be valued at least as

much as other skills associated with more technical and interventionist procedures, which usually focus on the patient's problem or symptom [1]. It is important to remember the positive effects on health that humanizing skills can have, which can bring about changes in terms of improving patients' health through ethical strategies, caring for the environment, verbal and non-verbal communication by professionals, caring for the patient or teaching the patient about their pathology and its management, and other contextual factors [2]. Thus, one of the main challenges in learning sustainable soft skills is integrating these skills into everyday work practices in a manner that promotes continuous improvement and resilience [3]. However, considering the most cost-effective pursuit of efficiency and effectiveness in the healthcare system, both financially and in terms of time, nurses describe how the pressure to provide care alongside an increase in administrative procedures makes humanized or invisible care more difficult [4,5].

Education plays a crucial role in fostering social, economic, and environmental sustainability, which is a concept that is widely acknowledged across academic disciplines [6]. However, integrating sustainability into education requires a paradigm shift, reorienting systems, policies, and practices to engage students in appropriate and relevant sustainability issues [7]. Efforts to improve all these dimensions in relation to education are worthwhile, as they enhance educational quality and positively impact patient's health and the quality of patient care by encouraging more communicative, humane, and patient-centered practices [8]. Global health is intrinsically linked to sustainable development, emphasizing a holistic approach that addresses social determinants and root causes, recognizing the interconnectedness of health with social, economic, environmental, and political factors [9]. When the physiotherapy program was adapted to higher education, there significant changes were implemented in both the assessment system and the teaching–learning model. One of the main features of this adaptation was to emphasize the acquisition of competencies, de-emphasizing the traditional teaching model of knowledge accumulation [10]. These competencies have been defined as "the ability of health professionals to integrate and apply knowledge, skills, and attitudes associated with the good practices of their profession in order to resolve the situations that arise" [11]. Based on this definition and taking into account not only integration but also application as forms of action and knowledge, Tejada Fernández and Ruiz Bueno add their definitions of competence, stating that it is not sufficient to only have competence in the use of resources, but it is necessary to have competence in knowing how to respond and use these resources well in the time and manner required by a certain situation [11]. Therefore, educational reform has recently emphasized the need to integrate humanistic education into curricula in order to improve the professionalism of future healthcare professionals [12,13]. Thus, the concept of sustainable healthcare education in the training of health professions has emerged as "the teaching and learning approaches that equip educators to develop student's knowledge, skills, worldviews, and practices based on the interdependence of ecosystems and human health, in order to contribute to a more sustainable human existence" [14].

According to the World Confederation for Physical Therapy, practice education is essential in enabling students to apply their acquired knowledge, continue learning in a practical environment, develop professional skills, and further enhance their competencies [15,16]. External clinical placements allow physiotherapy students to put into practice all the competences described, both theoretical and practical knowledge, in order to demonstrate their technical skills and act according to their values.

In Spain, Royal Decree (RD) 592/2014 regulates and guarantees the quality of student learning during external clinical placements and obliges universities to demonstrate the acquisition of student competences through assessment tools [17]. This RD mentions some general competences of a more human nature, such as a sense of responsibility, creativity

and initiative, personal commitment, and motivation [18]. It has been shown that these competences are of great importance in improving patients' health [2]. These competences, described in such general terms, underscore the need to develop more specific assessment tools, especially for human competences, as there are many specific questionnaires for technical competences but not for human aspects.

At the academic level, taking advantage of the momentum behind 'humanistic empowerment' projects such as the Invisible Care, Well-being, Security and Autonomy (CIBISA) scale, a tool for assessing nurses' capabilities in patient care during clinical placements has emerged. Reflective practice is a pedagogical tool that helps students develop reflective learning habits. Thus, not only is technical care integrated, but the more humanistic dimensions are also taken into account through self-assessment [19].

To the best of our knowledge, the CIBISA scale has not been validated for other healthcare professions such as physiotherapy. Therefore, this pilot study represents a novel contribution by adapting and validating the CIBISA scale—originally developed for nursing—for use in physiotherapy education. The objective of this study is to adapt and validate the CIBISA nursing scale to physiotherapy in a pilot study so that undergraduate physiotherapy students can self-assess their learning of invisible care during their clinical placements.

To achieve this objective, this study was carried out in two phases. In Phase One, we adapted the original scale and developed new items, describing the participants and data-collection procedure. In Phase Two, we validated the scale by analyzing its psychometric properties, including the sample, data collection, and assessment.

2. Materials and Methods

2.1. Study Design

A prospective longitudinal study was designed to adapt and prevalidate the CIBISA scale from nursing to physiotherapy.

This study has been designed according to the "Strengthening the Reporting of Observational Studies in Epidemiology" (STROBE) guidelines. The study was approved by the Ethical Committee of Universidad San Jorge (number 22/2/23-24). Informed consent was provided to all participants.

2.2. Procedure

The development of the modified CIBISA consisted of two phases: (1) the adaptation and development of new items and (2) validation by establishing validity (Figure 1).

2.2.1. Phase 1. Adaptation and Development of New Items

This phase was conducted between September 2022 and March 2023.

The initial scale was developed from the "Invisible Care, Well-being, Safety and Autonomy" (CIBISA) scale. This scale was created to self-assess the learning of nursing students during their clinical placements. It consists of 28 items grouped into three dimensions (autonomy, clinical safety, and well-being) in order to measure the identifying aspects of the profession in relation to patient care and soft skills [20].

Participants and data collection

The Delphi method was used in two rounds and a focus group was convened to achieve consensus on the adaptation of the CIBISA nursing scale to physiotherapy [21]. The coordination team selected 14 national experts in physiotherapy, who had experience in the clinical placements of physiotherapy. The representation of different profiles was guaranteed, including clinicians, teachers, and researchers. The inclusion criteria were (1) a history of more than 5 years of work experience and (2) links to physiotherapy clinical placements, the academic field, or research.

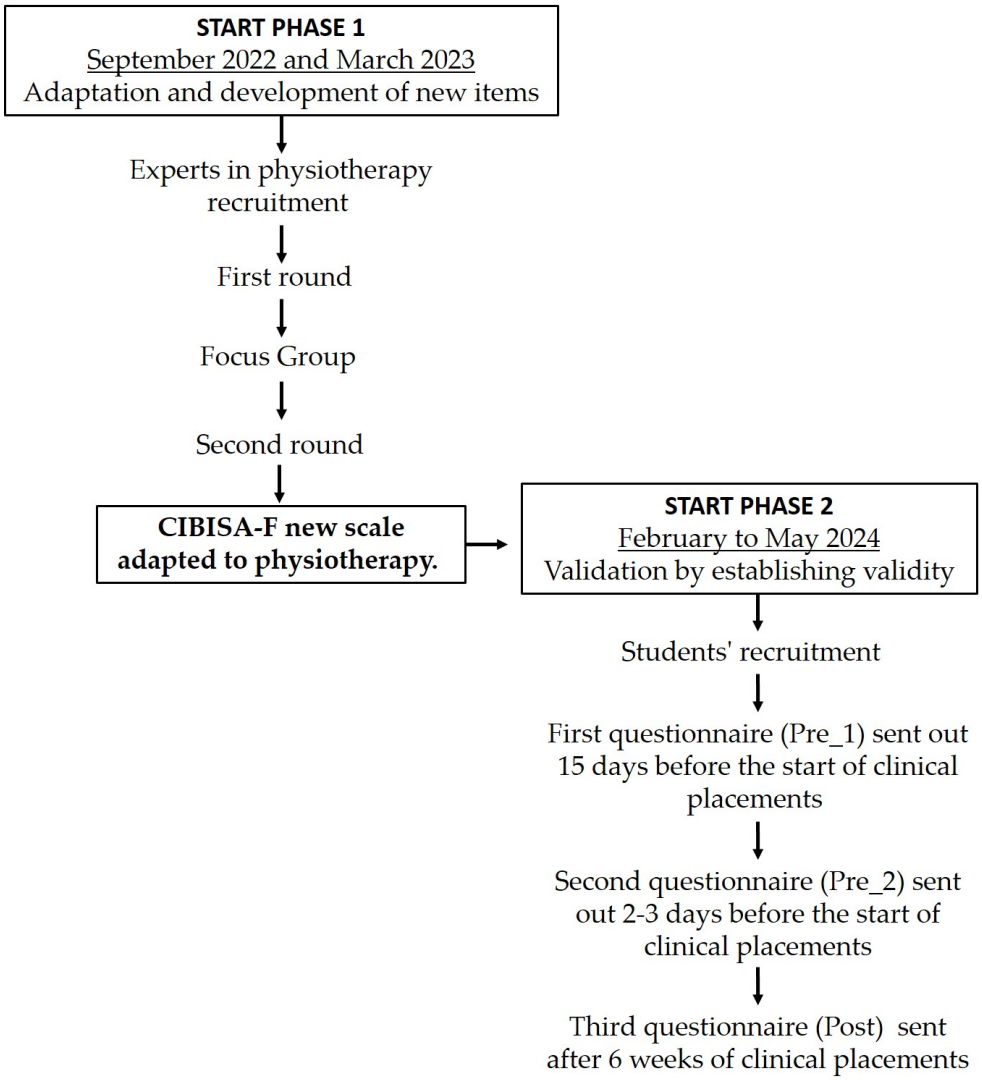

Figure 1. The workflow of the phases.

The experts received the scale and conceptual framework via email to assess the relevance, pertinence, coherence, and clarity of each item. They were asked to rate the items of the CIBISA scale from the nursing area in order to adapt them to the physiotherapy area as follows: relevant, not relevant, or relevant and modifiable. Any item that was considered relevant by more than 60% of the experts was considered relevant. The experts suggested alternatives if they thought the item should be changed.

Once the new version of the scale for physiotherapy was available, a focus group of 14 experts was formed to analyze and develop a preliminary version. Each item of the CIBISA scale was discussed. Those items where the consensus was less than 60% were voted on and this preliminary version was reviewed by the coordinator team, who analyzed the appropriateness of the items and ensured the comprehensibility of the scale.

In the second round, developed via email, the experts reassessed the structure and content of each item and created an agreement index with a cut-off point of 90%. Items below the cut-off point were adjusted or deleted by consensus. After the focus group and the second round, 30 items were obtained, with a total consensus among the entire panel of experts. CIBISA-F was the name proposed for the new scale adapted to physiotherapy.

2.2.2. Phase 2. Validation by Establishing Validity

This phase was conducted from February to May 2024.

Sample and participants

The study for the prevalidation of the CIBISA-F scale was conducted at the Universidad San Jorge (USJ) in Zaragoza (Spain), with 25 third-year physiotherapy students [22].

The inclusion criteria were (1) volunteer students with Spanish nationality, (2) over 18 years old, (3) enrolled for the first time in clinical placements, and (4) carrying out clinical placements in the Spanish territory.

Psychometric Assessment

For the psychometric validation of the CIBISA-F scale, the Spanish version of the Health Professionals Communication Skills scale (the assessment of a health professional's communication skills) and the Goldstein Social Skills Assessment scale (the assessment of social skills) were chosen [23–25]. Both scales have items related to the same dimensions of the CIBISA-F scale and were selected to assess correlations. The questionnaire was administered twice prior to the practice sessions to evaluate its reliability under consistent conditions. This was assessed by comparing the results of the first and second administrations. To analyze the effect of the clinical placements, a post-test measurement was conducted and compared with the pre-test results to determine any learning effects.

Reliability was assessed by internal consistency analysis with Cronbach's alpha statistic (acceptable if the value obtained exceeds 0.7) and by reproducibility analysis, assessed with the intraclass correlation coefficient (ICC) (considered adequate if the value obtained exceeds 0.7) and with the Brand–Altman plot [26–29].

Construct validity was tested by correlation and regression analysis with the Health Professionals Communication Skills and the Goldstein Social Skills Assessment scales.

Sensitivity to change was measured using Student's *t*-test for related samples. On one hand, the results obtained at two different times before the clinical placements (CIBISA-F Pre_1 and CIBISA-F Pre_2) were compared. On the other side, the Goldstein Social Skills Assessment scale was used to compare and calculate the sensitivity to change in CIBISA-F by comparing the results obtained before and after the clinical placements.

The resulting questionnaire CIBISA-F, with 30 items and four possible answers for each item, proved to be feasible and easy for the students to complete, taking about 10 min to answer.

All statistical analyses were performed using SPSS 28 for Windows (IBM Corp., Armonk, NY, USA). Statistical significance was set at $p < 0.05$.

The psychometric properties of the scale are described in the Section 3.

CIBISA-F Scale properties

The CIBISA-F scale was designed for self-administration. The scale was developed to self-assess physiotherapy students learning soft skills during their clinical placements. The scale consists of 30 items. Each item represents an action to be carried out based on soft skills. The actions are related to the treatment of the patient. Students should indicate how often they perform these actions. The response follows a Likert-type format with four possible answers: 1: Almost never or never; 2: Sometimes; 3: Frequently; 4: Almost always or always [20]. The overall value of the scale is estimated by calculating the average value of the answered items (range 1–4). The range of possible scores ranges from 30 to 120 points. The highest scores represent a higher level of care learning.

The Goldstein Social Skills Assessment Scale

The Goldstein Social Skills Assessment scale can be self-administered. Its purpose is to find out how a person behaves in different situations, and what kind of behavior they develop to deal with these situations. The scale was translated and adapted into Spanish by Ambrosio Tomás between 1994 and 1995 [25]. It consists of 50 items in the form of a list

of basic skills which can be more or less pronounced. These skills are in turn grouped into six dimensions: Basic Social Skills, Advanced Social Skills, Feeling Skills, Alternative to Aggression Skills, Coping with Stress Skills, and Planning Skills. Responses are categorized in a Likert-type format with five possible answers: 1: Never; 2: Very rarely; 3: Sometimes; 4: Often; 5: Always. The interpretation of the results provides information about the level of the person's social skills. Lower scores indicate a poorer level and progressively increase to low, normal, good, and finally excellent levels of ability.

The Health Professionals Communication Skills Scale (EHC-PS)

The Health Professionals Communication Skills scale (EHC-PS) is a self-administered scale, the purpose of which is to assess the dimensions of empathy, informative communication, respect, and social skills related to communication skills and assertiveness in health professionals. It features 18 items that quantify the agreement or frequency of the professional's actions in various situations that arise. Responses are categorized in a Likert-type format with 6 possible answers: 1: Almost never; 2: Occasionally; 3: Sometimes; 4: Usually; 5: Often; 6: Very often. Two of the items are inversely worded (items 16 and 18). The inverse wording is scored: 1: Very often; 2: Often; 3: Usually; 4: Sometimes; 5: Occasionally; 6: Almost never. For each dimension, higher scores indicate a greater manifestation of the assessed behavior [23].

Data collection

Data was collected in digital format via the Microsoft Forms 365 platform.

The first questionnaire (Pre_1) was sent out 15 days before the start of clinical placements. It consisted of four parts: 1. General questions related to age, assigned practice center, and the specialty of the practice center; 2. CIBISA-F scale; 3. Goldstein Social Skills Assessment scale; and 4. Health Professionals Communication Skills Scale. For each of the scales, participants were informed about the procedure for answering questions correctly.

The second questionnaire (Pre_2) was sent out 2–3 days before the start of clinical placements. It consisted of three parts: 1. CIBISA-F scale; 2. Goldstein Social Skills Assessment scale; and 3. Health Professionals Communication Skills scale.

The third questionnaire (Post), consisting of the three scales, was finally sent to the participants after 6 weeks of clinical placements.

3. Results

3.1. Phase 1. Adaptation and Development of New Items

3.1.1. Participants' Characteristics

The coordination team selected 14 national experts; 42.86% (n = 6) were clinical profiles, 21.43% (n = 3) were university teachers, and the remaining 35.71% (n = 5) were mixed.

3.1.2. Adaptation and Development of New Items

After the experts had conducted the first-round review of the 28 items of the *CIBISA nursing scale*, 20 items were considered relevant for physiotherapy (71.43%). Six items were identified as relevant and modifiable (21.43%), namely those with proposals for modification which were not voted as relevant by more than 60% of the experts. Items 6 "I have visited the patient without waiting for him/her to call me" and 17 "I have given injections, handled parenteral equipment, aspirators and other equipment in the service" (7.14%) were considered not relevant because they were very specific to the nursing area without the possibility of modification.

During the focus group, all proposed modifications from the first round were considered. As a result, 12 of the 26 items were adopted unchanged from the original CIBISA scale (46.15%) and the remaining 14 were retained with some changes (53.85%).

In the second round, the approval rate was 100 for 18 items, 92.86% for 7 items, and 85.71% for 1 item.

The experts and the coordination team determined that items 1, 4, 12, and 19 should be divided into two, as they describe several actions, making it difficult to answer them effectively.

After the focus group and the second round, 30 items were ultimately obtained, and there was total consensus among all the experts.

3.2. Phase 2. Validation by Establishing Validity

During this period, all students answered all questionnaires correctly. There were no dropouts, and no questionnaires were omitted due to response errors.

3.2.1. Participants' Characteristics

A total sample of 25 participants completed the survey (response rate = 100%). The proportion of women was 36% (n = 9) and the proportion of men was 64% (n = 16). All were third-year physiotherapy students at the University of San Jorge. The average age was 23.04 years (SD = 3.1) and ranged from 20 to 30 years.

A total of 16% carried out their clinical placements in pediatrics (n = 4), with 28% in musculoskeletal (n = 7), 8% in cardiorespiratory physiotherapy (n = 2), 8% in geriatrics (n = 2), 4% in urogynecology (n = 1), 12% in neurology (n = 3), and 24% in general physiotherapy (n = 6).

3.2.2. Reliability

Internal consistency

The internal consistency measured with Cronbach's α showed the results $\alpha = 0.911$.

Reproducibility

The ICC between the first questionnaire and the second questionnaire showed a value of 0.451. The Brand–Altman plot only left one measure out of the acceptable limits (Figure 2).

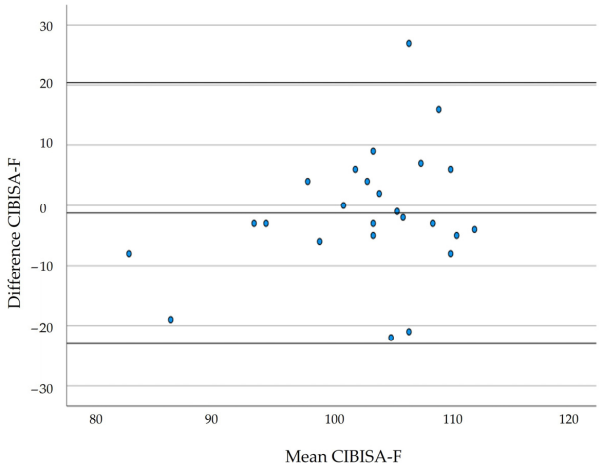

Figure 2. A Brand–Altman plot illustrating the agreement between the two administrations of the CIBISA-F scale. CIBISA-F: Invisible Care, Well-being, Security, and Autonomy scale. Blue dots are the values of mean CIBISA-F in the two measurements (X-axis) and difference of CIBISA-F in the two measurements per student. Horizontal Dark grey lines show the mean difference (the one in the middle) and the limits of agreement (mean difference ± 1.96 * standard deviation of the differences).

3.2.3. Construct Validity

Construct validity was measured with the Pearson's correlation coefficient, and a regression study of CIBISA-F was employed for the other questionnaires. This procedure was performed for the overall score of CIBISA-F with the Goldstein Social Skills Assessment and the Health Professionals Communication Skills scale domains.

The correlation values of the CIBISA-F scale with the Goldstein Social Skills Assessment scale and with the domains of the Health Professionals Communication Skills scale, at three different points in time, are shown in Table 1.

Table 1. Correlation analysis between CIBISA-F versus Goldstein scale and EHC-PS.

		Correlation with Goldstein Scale (*p*-Value)	**Correlation with EHC-PS (*p*-Value)**			
			D1-CI	D2-E	D3-R	D4-A
Pre_1	CIBISA-F	**0.370** (0.069)	**0.553** (0.004)	**0.729** (<0.001)	**0.449** (0.025)	**0.684** (<0.001)
Pre_2	CIBISA-F	**0.714** (<0.001)	**0.614** (0.001)	**0.680** (<0.001)	**0.519** (0.008)	**0.615** (0.001)
Post	CIBISA-F	**0.688** (<0.001)	**0.608** (0.001)	**0.653** (<0.001)	**0.446** (0.025)	**0.232** (0.265)

Pre_1: 15 days before clinical placements; Pre_2: 2–3 days before clinical placements; Post: after clinical placements; CIBISA-F: Invisible Care, Well-being, Security, and Autonomy scale; Goldstein scale: Goldstein Social Skills Assessment scale; EHC-PS: Health Professionals Communication Skills scale; D1-CI: Domain 1—informative communication; D2-E: Domain 2—Empathy; D3-R: Domain 3—Respect and social skills; D4-A: Domain 4—Assertiveness. In bold: correlation coefficient; in brackets: *p*-value.

The results of the regression analysis between the questionnaires, with the results of the CIBISA-F scale as the dependent variable, are shown in Table 2.

Table 2. The regression analysis of CIBISA-F according to the Goldstein scale and EHC-PS at three points in time.

		Coefficient of Determination with Goldstein Scale (R^2)	**Coefficient of Determination with EHC-PS (R^2)**			
			D1-CI	D2-E	D3-R	D4-A
Pre_1	CIBISA-F	0.137	0.306	0.532	0.201	0.46
Pre_2	CIBISA-F	0.509	0.377	0.462	0.269	0.379
Post	CIBISA-F	0.473	0.369	0.426	0.199	0.054

Pre_1: 15 days before clinical placements; Pre_2: 2–3 days before clinical placements; Post: after clinical placements; CIBISA-F: Invisible Care, Well-being, Security, and Autonomy scale; Goldstein scale: Goldstein Social Skills Assessment scale; EHC-PS: Health Professionals Communication Skills scales; D1-CI: Domain 1—informative communication; D2-E: Domain 2—Empathy; D3-R: Domain 3—Respect and social skills; D4-A: Domain 4—Assertiveness.

3.2.4. Sensitivity to Change

To analyze the sensitivity to change, a mean comparison was performed by comparing the results obtained in both measurements performed on the CIBISA-F scale prior to the clinical placements. The analysis revealed no significant differences between the two different time points ($p = 0.555$) (Table 3).

The Goldstein Social Skills Assessment scale was used to compare and calculate the sensitivity to changes in the CIBISA-F scale, showing that both questionnaires present variation and that the CIBISA-F scale has the same sensitivity to change as the Goldstein questionnaire (Table 4).

Table 3. Sensitivity to changing the Pre_1–Pre_2 values of CIBISA-F.

Comparison	Pre_1 Mean (SD)	Pre_2 Mean (SD)	*p*-Value *	Difference in Means (CI 95%)
CIBISA-F	102.24 (10.10)	103.52 (7.68)	0.555	−1.28 (−5.68–3.12)

Pre_1: 15 days before clinical placements; Pre_2: 2–3 days before clinical placements; SD: Standard deviation; CIBISA-F: Invisible Care, Well-being, Security, and Autonomy scale. * Student's *t*-test is used for related samples.

Table 4. Sensitivity to changing the Pre_1–Post values of the CIBISA-F and Goldstein scales.

Comparison	Pre_1 Mean (SD)	Post Mean (SD)	*p*-Value *	Difference in Means (CI 95%)
CIBISA-F	102.24 (10.10)	108.40 (7.74)	0.005	−6.10 (−10.22–−2.09)
Goldstein Social Skills Assessment scale	192.8 (14.88)	212.92 (24.44)	<0.001	−20.84 (−29.78–−11.89)

Pre_1: 15 days before clinical placements; Post: after clinical placements; SD: standard deviation; CIBISA-F: Invisible Care, Well-being, Security, and Autonomy scale; Goldstein scale: Goldstein Social Skills Assessment scale. * Student's *t*-test is used for related samples.

4. Discussion

One of the challenges that physiotherapy faces nowadays is the availability of value-based, high-quality sustainable healthcare education, as well as the teaching of soft skills that go beyond more technical skills. Humanistic principles empower learners to become agents of change, providing sustainable healthcare that improves health and delivery without compromising future needs [30]. It is crucial to recognize the positive health impacts associated with humanizing skills. These skills can lead to improvements in patient health through ethical strategies, environmental care, and verbal and nonverbal communication by professionals. In addition, informing patients about their conditions and the management of their disease, among other contextual factors, is important. A previous study explored the clinical placements of students in the field of nursing from an educational point of view [19,20,31].

In this study, a 30-item CIBISA-F scale, which measures the learning of invisible care in physiotherapy, was adapted and validated. To our knowledge, this is the first known study conducted to devise a scale to assess humanized healthcare in physiotherapy students in placements and to measure its psychometric properties. The results demonstrated high internal consistency, test–retest reliability, construct validity, and sensitivity to change.

All respondents answered the questionnaires three times, and no questionnaires with blank items were found. In addition, as with the validation study of the CIBISA nursing scale, all students completed the questionnaire in less than 10 min.

Internal consistency

The internal consistency measured with Cronbach's α showed a α value = 0.911 for the CIBISA scale adapted to physical therapy, indicating excellent reliability [26–28]. According to the recommendations of George and Mallery (2003, p. 231) [32], this is considered an excellent coefficient and therefore it a highly reliable questionnaire. Values above the CIBISA scale for nursing were obtained, with α = 0.888 [20]. These results may be due to the decision to subdivide four of the items (1, 4, 12 and 19), as they originally described multiple actions and were difficult to answer. This decision could have made the response to these items more accurate.

The questionnaires used to compare the CIBISA-F results included the Goldstein Social Skills Assessment scale with an internal consistency of α = 0.924 and the Health Professionals Communication Skills scale, whose internal consistency is divided into domains: 0.77 for empathy, 0.78 for informative communication, 0.74 for respect, and 0.65 for social skills. A Cronbach's alpha of 0.5–0.6, obtained by comparing the sum of the

responses to the CIBISA-F questionnaires given at three different points in time with the Goldstein Social Skills Assessment scale, indicates reproducibility. Furthermore, similar data were observed in the validation of the Humanization of Healthcare Scale (HUMANS) for nursing professionals, where after comparing the various dimensions of humanized healthcare with three other scales, it was found that virtually all dimensions were positively correlated [33].

Reproducibility

The ICC value achieved in this pilot study after administering the questionnaire to the same population on two different occasions before the clinical placements is considered to be sufficient [27,29].

Compared to similar studies such as the study on the psychometric properties of the Health Professionals Communication Skills Scale, in which the test–retest carried out for the four domains that compose it showed a high ICC value and its lowest value was 0.79 [34], or in the study on the Perception of Invisible Nursing Care—Hospitalization questionnaire, in which we also observed an ICC value between 0.71 and 0.9, showing good reliability [35], it may seem that our CCI results are low. However, it should be noted that this occurs because there are few differences between the two time points, as shown by the fact that the mean difference for values above 100 is 1.28. As the values change only slightly, it is unlikely that the results will show higher values, as this is a comparison of the variability between the students and the total number in a pilot study with a small sample of participants.

Both the Brand–Altman plot, in which all but one of the values lies within the expected range, and the Student's *t*-test for related samples, show that the CIBISA-F scale is reliable in the repetition of the assessment of people with no change in their condition [27,29].

Construct Validity

The construct validity of the CIBISA-F scale was tested through correlation and regression analysis using the Goldstein Social Skills Assessment scale and the domains of the Health Professionals Communication Skills scale at three different points in time. The high values of the correlation coefficient and the appropriate fit of regression models indicate adequate validity. Only 2 of the 15 measurements indicated non-significant values in 25 cases. The fact that the data for the remaining 13 measurements were significant suggests that this may be due to the small sample size. These results are similar to those of other measures of invisible care, such as the Perception of Invisible Nursing Care—Hospitalisation questionnaire, which found a moderate to strong relationship with the Spanish validated version of the Newcastle Satisfaction with Nursing Scales (NSNS) [35]. This may be attributed to the same cause observed in the correlation with the Goldstein Social Skills Assessment Pre_1, where the result was not statistically significant ($p = 0.069$). In contrast, high values were observed just before the start of the clinical placements and afterwards at both time points ($p < 0.001$).

The Health Professionals Communication Skills scale has been verified in each one of its domains, showing significant results in all domains during both pre-clinical placement measurements ($p < 0.05$). However, in the Post assessment, the results of the assertiveness domain were not significant ($p = 0.265$). The CIBISA nursing scale corresponds to the three domains of the triangle of care developed by Concepción German: autonomy, clinical safety, and well-being [36]. In the validation study, the domains were analyzed individually, concluding that there are no items that correspond exclusively to one of the three dimensions originally proposed.

As the CIBISA-F scale is not presented as a scale with domains, we believe that a larger sample is required to correlate the overall calculation of the items of which it is composed

with the individual domains of the Healthcare Professional Communication Skills scale in order to conduct a more comprehensive analysis.

Sensitivity to change

Sensitivity to change is the measure taken to assess the ability of an instrument to detect a change in the results obtained after repeated applications, at different times, of the same instrument [37,38].

After reviewing the bibliography when searching for articles on the validation of scales similar to the study presented here, we did not find any articles that take this aspect into account, or if there were any, the methodologies used were very diverse and therefore difficult to compare [20,31,35,38].

The Goldstein Social Skills Assessment scale and the CIBISA-F scale were compared twice before the students started their clinical placements. There were no significant differences ($p > 0.05$), indicating that both scales showed no changes in students prior to their clinical placements. This suggests that the CIBISA-F scale is consistent and stable in the assessment of humanized skills, as it showed no variations in the students' results in the two measurements performed [37,38].

In addition, there were statistically significant changes ($p < 0.05$) when comparing the Goldstein Social Skills scale and the CIBISA-F scale answered before and after the clinical placements. In this case, students increased their scores on both questionnaires, suggesting that the basic characteristics of assessment tools for measuring longitudinal change over time are represented [37,38]

Limitations

The main limitations of the present study are its small sample size and the fact that it was conducted at a single university center. As this is a pilot study, the primary objective was to explore the feasibility of adapting and validating the CIBISA scale for physiotherapy students, rather than to draw definitive conclusions. The modest number of participants limits the generalizability of the findings and the robustness of the psychometric analyses. However, the preliminary results are promising and suggest that the CIBISA-F scale may be a valuable and innovative tool for assessing the development of soft skills and invisible care in physiotherapy education. These findings lay the groundwork for future multi-center studies with larger and more diverse samples to confirm and expand upon these initial insights.

5. Conclusions

The results of the present study suggest that this version of the CIBISA-F scale is a useful and reliable tool for measuring humanization skills that has been designed according to the experiences of physiotherapy students during their clinical placements in the context of educating humanized health professionals.

The availability of this scale makes it possible to objectify the progress of learning in care beyond purely technical procedures, as well as allowing us to measure how students' learning and competence levels increase. It can also facilitate a comparison between students to detect specific learning needs. The availability of CIBISA-F will allow the acquisition of these competences to be monitored in a sustainable way; this is necessary for proper healthcare practice and undoubtedly contributes to a greater humanization of care.

The humanistic perspective that the CIBISA-F scale gives to the measurement of learning makes it possible to overcome the challenge that students, when self-assessing themselves, place importance on soft skills related to patient care that would otherwise be invisible and unappreciable. This aligns with the principles of sustainable healthcare

education, ensuring that future healthcare professionals are able to make responsible decisions after receiving a quality education based on humanization.

Despite the promising results, this study has limitations, including the sample size and the single-institution context, which may affect the generalizability of the findings. These limitations highlight the need for future research to expand the sample through multicenter studies and to include diverse educational and healthcare settings. Such efforts will reinforce the psychometric robustness of the instrument and validate its applicability across contexts.

Furthermore, future research should explore the longitudinal impact of using the CIBISA-F scale on students' development of humanization skills over time. It would also be beneficial to investigate the relationship between students' self-assessed soft skills and patient outcomes, including perceived quality of care. Additionally, implementing and evaluating training programs based on the CIBISA-F framework could provide insights into how structured interventions influence the development of humanized care competencies in healthcare professionals.

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Abbreviations

The following abbreviations are used in this manuscript:

CIBISA	Invisible Care, Well-being, Security, and Autonomy nursing Scale
CIBISA-F	Invisible Care, Well-being, Security, and Autonomy Scale adapted to Physiotherapy
RD	Royal Degree
STROBE	Strengthening the Reporting of Observational Studies in Epidemiology
ICC	Intraclass Correlation Coefficient
SPSS	Statistical Package for Social Sciences

EHC-PS	Health Professionals Communication Skills Scale
Pre_1	15 days before clinical placements
Pre_2	2–3 days before clinical placements
Post	After clinical placements
D1-CI	Domain 1—Informative communication
D2-E	Domain 2—Empathy
D3-R	Domain 3—Respect and social skills
D4-A	Domain 4—Assertiveness
CI	Confidence Interval
SD	Standard Deviation
NSNS	Newcastle Satisfaction with Nursing Scale

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