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RESEARCH ARTICLE (ORIGINAL)

Adaptation and Validation of the Caregiver Health Engagement Scale for the Portuguese Cultural Context

Adaptação e Validação da Escala Caregiver Health Engagement para a Cultura Portuguesa

Adaptación y validación de la escala Caregiver Health Engagement para la cultura portuguesa

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Abstract
Background: Assuming the role of family caregiver is a complex process that requires engagement, negotiation, and resolution among all involved. Promoting caregiver engagement fosters a more active approach to caregiving. Using instruments to measure engagement enables the guidance of nursing interventions and improves the health and quality of life of family caregivers and the people they care for.
Objective: To translate, adapt, and validate the Caregiver Health Engagement Scale for the Portuguese language and culture.
Methodology: Methodological study with content, linguistic, and conceptual validation. Reliability was assessed using Cronbach's alpha, and construct validity was evaluated through exploratory factor analysis with Varimax rotation.
Results: The sample comprised 91 caregivers, predominantly women (82.4%), with a median age of 65 years; 46.2% were caring for a parent, and 30.8% were spouses of the care recipient. The scale demonstrated good internal reliability (α = 0.825), a clear unifactorial structure, and satisfactory convergent and divergent validity.
Conclusion: The Portuguese version of the Caregiver Health Engagement Scale is psychometrically robust and culturally appropriate and can be integrated into assessment protocols for family caregivers.

Keywords: caregivers**;** engagement; validation study

Resumo
Enquadramento: Assumir o papel de familiar cuidador é um processo complexo, exigindo *engagement*, negociação e resolução com todos os envolvidos. Promover o engagement dos cuidadores, pode fomentar uma postura mais ativa no cuidar. Recorrer a instrumentos para mensurar o *engagement* possibilitará orientar terapêuticas de enfermagem e melhorar a qualidade em saúde dos familiares cuidadores e das pessoas que cuidam.
Objetivo: Traduzir, adaptar e validar a *Caregiver Health Engagement scale* (CHEs) para a língua e cultura portuguesas.
Metodologia: Estudo metodológico, com validação de conteúdo, linguística e concetual. A fiabilidade foi avaliada pelo alfa de Cronbach e a validade de constructo por análise fatorial exploratória com rotação Varimax.
Resultados: A amostra incluiu 91 cuidadores, maioritariamente mulheres (82,4%), com mediana de 65 anos; 46,2% eram filhos/as e 30,8% cônjuges da pessoa cuidada. A escala mostrou boa fiabilidade (α = 0,825), estrutura unifatorial e validade convergente/divergente adequada.
Conclusão: A versão portuguesa da CHEs é psicometricamente robusta e culturalmente adequada, podendo ser integrada em protocolos de avaliação de familiares cuidadores.

Palavras-chave: familiar cuidador; engajamento; estudo de validação

Resumen
Marco contextual: Asumir el papel de cuidador familiar es un proceso complejo que requiere compromiso, negociación y resolución con todas las partes implicadas. Promover el compromiso de los cuidadores puede fomentar una actitud más activa en el cuidado. Recurrir a instrumentos para medir el compromiso permitirá orientar los tratamientos de enfermería y mejorar la calidad de la salud de los familiares cuidadores y de las personas a las que cuidan.
Objetivo: Traducir, adaptar y validar la *Caregiver Health Engagement scale* (CHEs) a la lengua y cultura portuguesas.
Metodología: Estudio metodológico, con validación de contenido, lingüística y conceptual. La fiabilidad se evaluó mediante el alfa de Cronbach y la validez del constructo mediante el análisis factorial exploratorio con rotación Varimax.
Resultados: La muestra incluyó a 91 cuidadores, en su mayoría mujeres (82,4 %), con una mediana de edad de 65 años; el 46,2 % eran hijos/as y el 30,8 % cónyuges de la persona cuidada. La escala mostró una buena fiabilidad (α = 0,825), una estructura unifactorial y una validez convergente/divergente adecuada.
Conclusión: La versión portuguesa de la CHE es psicométricamente sólida y culturalmente adecuada, y puede integrarse en protocolos de evaluación de familiares cuidadores.

Palabras clave: cuidadores; compromiso; estudio de validación

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Introduction

Demographic aging, the increasing prevalence of chronic diseases, and higher levels of dependency require effective responses to ensure high-quality care focused on individual needs (Barello et al., 2019; Morelli et al., 2019; Ris et al., 2019). Concurrently, a shift from hospital-based to home-based care has placed greater responsibility on families, with family caregivers assuming a central role in care provision (Chung et al., 2017; Morelli et al., 2019; Nemati et al., 2017; Ris et al., 2019).

In this new paradigm, family caregivers emerge as key agents in the continuity of care, facing demands for which they are often unprepared (Ortiz, 2020; Ris et al., 2019). Family caregiver engagement, understood as active emotional and cognitive involvement in the caregiving process, has been associated with better health outcomes, greater self-efficacy, and lower burden (Holroyd-Leduc et al., 2016; Morelli et al., 2019). Therefore, its promotion is essential to ensure the quality and safety of care, as well as the well-being of family caregivers.

In this context, the present study aimed to translate, adapt, and validate the Caregiver Health Engagement Scale (CHEs) for the Portuguese language and culture, contributing to the availability of an instrument sensitive to the experiences of family caregivers and supporting a more effective and person-centered nursing practice, with interventions tailored to different engagement profiles.

Background

Taking on the role of family caregiver is a significant transition that requires emotional, cognitive, and technical adaptation to the demands of caregiving. For this transition to be successful, it is essential to recognize the family caregiver as an active agent, valuing their experience and promoting their engagement in the therapeutic process (Barello et al., 2019). Engagement is understood as committed participation in caregiving, directly influencing both care quality and caregiver well-being. Nurses, as frontline professionals, play a central role in fostering engagement through interventions tailored to the needs of family members (Ortiz, 2020; Ris et al., 2019).

According to the World Health Organization (WHO), engagement is a process of building the capacity of patients, families, caregivers, and health professionals to facilitate and support the active involvement of patients in their own care, promoting safe and person-centered care (Higgins et al., 2017; World Health Organization [WHO], 2016). Therefore, the engagement of family caregivers, supported by an active partnership with professionals and the person receiving care, is essential for safer and more effective care. In the home setting, engagement enhances therapeutic adherence but may be compromised if the caregiver is excluded from health-related decision-making (Barello et al., 2019).

Although the definition of family caregiver engagement has been explored in several studies, it has largely focused on behavioral aspects (Barello et al., 2019; Brown et al., 2015; Carman et al., 2013), often disregarding caregivers' perceptions of their engagement and the influence of their lived experiences (Barello et al., 2019). To address the lack of psychometric instruments assessing caregiver engagement, Barello et al. (2019) developed the CHEs, a seven-item instrument rated on a seven-point Likert scale. Completed by caregivers based on their self-perceived role, the CHEs identifies four engagement profiles: Denial, Hyper-activation, Drowning, and Balance (Barello et al., 2019).

Family caregiver engagement is essential for the sustainability of health services and for improving the quality of care, benefiting both caregivers and care recipients (Holroyd-Leduc et al., 2016; Morelli et al., 2019). Given the absence of validated instruments to assess caregiver engagement in Portugal, it became necessary to translate, adapt, and validate the CHEs for the Portuguese cultural and linguistic context. This validation constitutes a significant contribution to nursing practice by providing a sensitive and scientifically robust instrument that supports early identification of caregivers at risk, guides interventions aligned with different engagement profiles, and promotes more effective, personalized, and person-centered care.

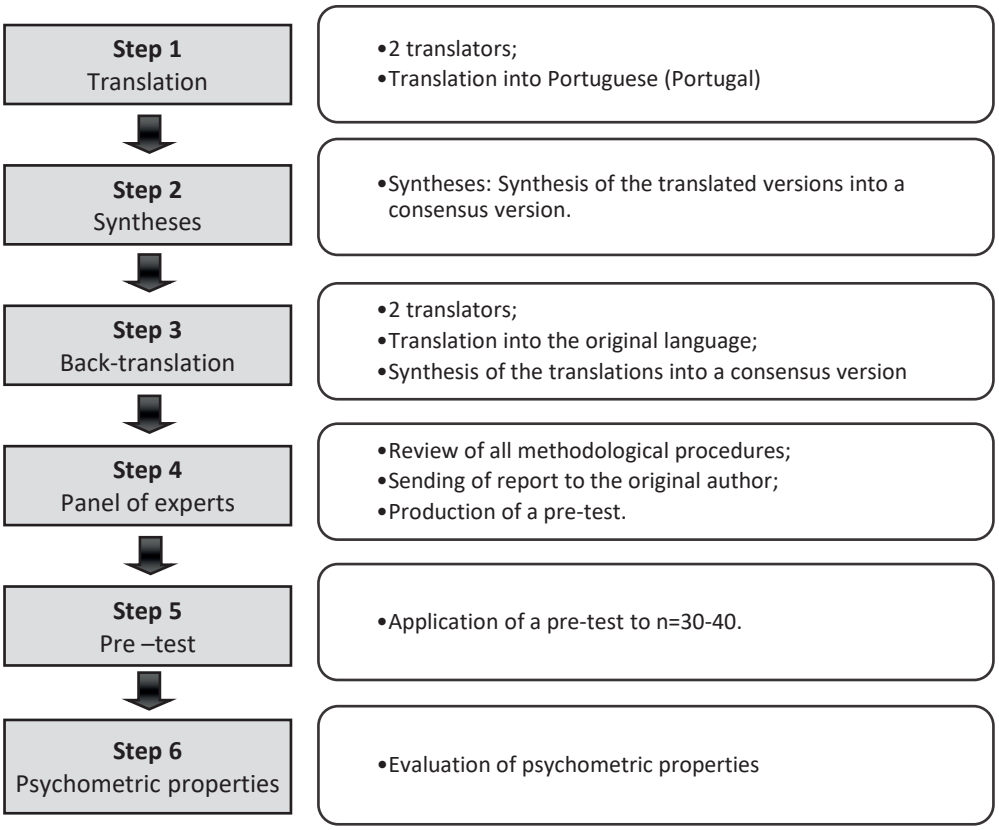
Methodology

This methodological study aimed to conduct the cross-cultural adaptation and psychometric evaluation of the CHEs, originally developed by Barello et al. (2019), from whom authorization was obtained for its translation, adaptation, and validation to the Portuguese language and cultural context. The instrument comprises seven items rated on a seven-point Likert scale and identifies four profiles of family caregiver engagement — Denial, Hyper-activation, Drowning, and Balance — reflecting distinct levels of emotional, cognitive, and behavioral involvement in the caregiving process.

The cross-cultural adaptation followed six stages: translation, synthesis of translations, back-translation, expert panel review, pre-testing, and assessment of psychometric properties (Beaton et al., 2000; Figure 1).

Figure 1

Stages of translation and adaptation of the Caregiver Health Engagement Scale



In the first stage, corresponding to the initial translation, two independent translations were carried out by Portuguese translators fluent in the original language of the scale. Consistent with the recommendations of Beaton et al. (2000), only one of the translators had prior knowledge of the subject under study. The two translated versions were subsequently compared and synthesized into a consensus version (Beaton et al., 2000).

In the third stage, a back-translation of the consensus version was completed by translators with linguistic and cultural proficiency in the original language of the scale and without prior knowledge of its original version. The two back-translated versions were then integrated into a single document (Beaton et al., 2000).

Next, a panel of experts reviewed the instrument to assess semantic, idiomatic, conceptual, and cultural equivalence (Beaton et al., 2000). The expert panel consisted of a professor with experience in cross-cultural adaptation, three primary health care nurses, two Portuguese teachers, and a translator. After validation and consensus, the finalized version of the instrument was submitted to the original authors.

In the penultimate phase, a pre-test was conducted with a sample of 30 family caregivers using the think-aloud protocol, which allows access to participants' cognitive processes while completing the instrument. This method facilitates the identification of comprehension challenges, semantic ambiguities, and visual layout issues that could compromise the validity of the adapted version (Güss, 2018; Van Someren et al., 1994). Participants verbalized their thoughts as they completed the scale, enabling assessment of its visual presentation, clarity of instructions, and item comprehensibility, as well as the time required for completion. The mean completion time was approximately five minutes, confirming its feasibility in clinical settings.

Inclusion criteria for the sample were defined in alignment with the population studied by Barello et al. (2019): the family caregiver assists or cares for a dependent person in daily life; both the caregiver and care recipient are over 18 years of age; the caregiver has no cognitive limitations; the caregiver understands and speaks Portuguese; and both reside in the municipality of Porto and are registered with a local health unit.

Following the pre-test and given that no reformulation was necessary, the instrument was administered to a sample of 91 family caregivers. The sample size was planned according to methodological recommendations for psychometric validation studies, which suggest five to ten participants per item (Cruchinho et al., 2024). Considering the seven items of the CHEs, a minimum of 70 participants was established, and this threshold was exceeded. Alongside the application of the translated CHEs, a sociodemographic characterization of the family caregiver and care recipient was conducted, as well as an assessment of caregiver burden and general self-efficacy. For statistical analysis, IBM SPSS Statistics version 28.0 was used. Construct validity was examined through prin-

cipal component analysis, preceded by the Kaiser–Meyer–Olkin test (KMO > 0.6) and Bartlett's test of sphericity ($p < 0.05$), which confirm the adequacy of the correlation matrix for factor analysis (Martini-Blanquel, 2024). The results supported the unidimensional structure of the scale and the retention of all seven original items.

Internal consistency was assessed using Cronbach's alpha, with values above 0.70 considered acceptable (Kilic, 2016; Martini-Blanquel, 2024). This metric evaluates the intercorrelation among items, indicating whether they measure the same construct.

Convergent and divergent validity were explored through correlations with theoretically related instruments: the General Self-Efficacy Scale and the Caregiver Burden Scale. This procedure evaluates whether the CHEs demonstrates the expected associations with similar constructs and appropriate differentiation from constructs of a different nature, as recommended in psychometric validation research.

The study received approval from the relevant ethics committee. Verbal and written consent were obtained through an Informed, Free, and Clear Consent Form, emphasizing voluntary participation, anonymity, and confidentiality.

Results

Sample characterization

The sample comprised 91 family caregivers with a median age of 65 years. Most were female (82.4%), married (65.9%), professionally active (52.7%), and cohabiting with the care recipient (94.5%). Regarding their relationship to the person receiving care, 46.2% were descendants (sons or daughters) and 30.8% were spouses. Participants reported their motivation to provide care primarily as love (47.3%) or duty/obligation (28.6%; Table 1).

The median duration of caregiving was five years, with caregivers dedicating a median of 84 hours per week to caregiving activities. Additionally, 63.7% reported sharing caregiving tasks and responsibilities with another person for a median of three years.

The median age of the care recipients was 84 years; 54.9% were female, 47.3% were married, and 35.2% were widowed. A total of 76.9% had a Barthel Index score equal to or less than 60. Dependency had emerged approximately five years earlier, most often gradually (56.0%), and was commonly associated with acute illness (29.7%) or chronic illness (39.6%). In the previous year, 37.4% of care recipients had been hospitalized between one and two times, and 34.1% had used emergency services. They consumed a median of eight different medications in three daily doses (Table 1).

Table 1

Characteristics of Family Caregivers and Care Recipients

Characteristics of Caregivers	Characteristics of Care Recipients
65 years old	84 years old
Gender: 82.4% female	Gender: 54.9% female
Marital status: 65.9% married	Marital status: 47.3% married; 35.2% widowed
Professionally active: 52.7%	Consumption of eight different drugs in three doses per day
Living with the person receiving care: 94.5%	Onset of dependency: gradual (56.0%)
Degree of relationship: 46.2% children; 30.8% spouses	Reason for dependency: acute illness (29.7%); chronic illness (39.6%)
Provides care out of love (47.3%) or duty (28.6%)	Barthel Index ≤ 60: 76.9%
Time as caregiver: 5 years	Duration of dependency: 5 years
Weekly hours of care: 84 hours	Hospitalizations in the last year: 37.4% between 1 and 2 times
63.7% have shared caregiving responsibilities for 3 years	Use of emergency services: 34.1% in the last year

Factor Analysis

The construct validity of the Portuguese version of the CHEs was examined through exploratory factor analysis using the principal component method. The adequacy of the correlation matrix was confirmed through two key statistical indicators: the Kaiser–Meyer–Olkin measure (KMO = 0.813), which demonstrated satisfactory sampling adequacy, and Bartlett's test of sphericity ($\chi^2 = 204.285$; $df = 21$; $p < 0.001$), which confirmed the presence of significant correlations among the items.

A single factor with an eigenvalue greater than 1 (3.433) was extracted, accounting for 49.04% of the total variance. Factor loadings ranged from 0.538 to 0.785, all exceeding the minimum acceptable threshold of 0.50, indicating strong saturation of the items in the underlying factor. Communalities ranged from 0.290 to 0.617. Although two items presented values slightly below 0.40, they were retained due to theoretical relevance and their contribution to the construct (Table 2).

Table 2

Factor loadings of the scale in the single extracted component, KMO values, Bartlett's test, and total variance

Caregiver Health Engagement		Component
Item 1		0.734
Item 2		0.783
Item 3		0.751
Item 4		0.785
Item 5		0.538
Item 6		0.708
Item 7		0.556
KMO measure of sampling adequacy		0.813
Bartlett's sphericity test	Approx. Chi-square	204.285
	df	21
	Sig.	<.001
Total variance (%)		49.04

Note. KMO = Kaiser-Meyer-Olkin; df = Degrees of freedom; Sig = Statistical significance.

Although Varimax rotation was specified in the statistical procedure, it was not applied because only one factor was retained, rendering rotation unnecessary.

Reliability study

The internal consistency of the scale was assessed using Cronbach's alpha, which yielded a value of 0.825. This indicates good reliability and suggests that the items are highly homogeneous and appropriate for measuring a single latent construct.

Corrected item–total correlations ranged from 0.410 (item 5) to 0.668 (item 4), demonstrating that all items contributed positively to the scale. Removing any item would not substantially increase Cronbach's alpha, confirming the internal coherence and stability of the instrument.

Convergent and divergent validity

Construct validity is a fundamental element in the psychometric evaluation of health-related instruments (Campo-Arias & Pineda-Roa, 2022; Krause, 1972). In this study, convergent and divergent validity were assessed by examining correlations between caregiver engagement and two theoretically associated constructs: caregiver's general self-efficacy and perceived caregiver burden (Table 3).

Table 3

Correlation between engagement, general self-efficacy, and burden

Correlations	Correlation Coefficient (r)	*p*-value	CI (95%)
Family caregiver engagement and general self-efficacy	0.513	< 0.001	0.344 a 0.650
Family caregiver engagement and burden	–0.386	< 0.001	–0.548 a –0.195

Note. *p*-value = Probability/significance value; CI = Confidence interval.

A positive and significant correlation was identified between caregiver engagement and general self-efficacy ($r = 0.513$; $p < 0.001$). This finding suggests that caregivers with higher engagement perceive themselves as more effective in fulfilling caregiving responsibilities. The 95% confidence interval (0.344 to 0.650) supports the robustness of this association and indicates a moderate-to-strong relationship, consistent with literature on self-concept and motivation in informal care and confirming convergent validity.

The CHEs also demonstrated a negative and statistically significant correlation with the Caregiver Burden Scale ($r = –0.386$; $p < 0.001$), with a 95% confidence interval ranging from –0.548 to –0.195. This result aligns with theoretical assumptions that more engaged caregivers experience lower emotional and physical burden. The moderate magnitude of the correlation is appropriate for demonstrating divergence between constructs while maintaining conceptual distinction.

Discussion

Assessing the engagement of family caregivers is an innovative development in informal care research, as it enables

an understanding of the degree of active, conscious, and emotional involvement of caregivers in the caregiving process. This study contributes to exploring the relationship between engagement and psychosocial variables such as self-efficacy and burden, providing empirical evidence supporting the validity of the construct.

Enhancing engagement by fostering caregivers' awareness of their needs and competencies can promote a more dynamic and participatory attitude toward caregiving (Graffigna & Barello, 2018; Guida et al., 2019). In this regard, the use of a scientific measure sensitive to individual experiences and perceptions is essential for guiding caregiver-centered practices and improving the quality of care (Barello et al., 2019; Graffigna & Barello, 2018).

The validation of the Portuguese version of the CHEs followed rigorous methodological procedures aligned with Beaton et al. (2000) for the translation and cross-cultural adaptation of instruments, ensuring conceptual, semantic, and cultural equivalence with the original version. Adapting existing instruments rather than creating new ones supports international comparability and optimizes methodological resources (Cruchinho et al., 2024).

Psychometric analyses demonstrated high internal consistency ($\alpha = 0.825$), a clear unidimensional structure, and satisfactory convergent and divergent validity. Together, these findings confirm the suitability of the scale for assessing caregiver engagement, a construct increasingly recognized as a determinant of informal care quality, influencing adherence to therapeutic plans, continuity of care, and caregiver well-being (Barello et al., 2019; Fields et al., 2023; Haley & Elayoubi, 2024).

Assessing caregiver engagement is highly relevant, given that family caregivers constitute a fundamental pillar of healthcare systems, particularly in contexts of population aging and multimorbidity (Barello et al., 2019; Fields et al., 2024). It is estimated that more than 80% of care for dependent older adults is provided by informal caregivers, typically family members who receive no remuneration and limited institutional support (Coe & Werner, 2022; Huis in 't Veld et al., 2022; Shaji & Reddy, 2012).

Higher levels of caregiver engagement are significantly associated with lower burden and greater perceived self-efficacy (Barello et al., 2019; Morelli et al., 2019). Engagement can also promote the autonomy of the care recipient, reduce the likelihood of institutionalization or reliance on formal home services, and contribute to more efficient resource management (Liu et al., 2020; Morelli et al., 2019). The present study's positive correlation between engagement and self-efficacy ($r = 0.513$) and negative correlation with burden ($r = –0.386$) are consistent with this evidence and reinforce the theoretical validity of the construct.

Caregiver engagement is a structuring element for the sustainability of healthcare services, as it supports the continuity of home-based care, reduces dependence on formal services, and optimizes resource use (Holroyd-Leduc et al., 2016; Morelli et al., 2019). Active involvement enhances the quality of care and contributes to the well-being of the caregiver–care recipient dyad, as caregivers often attribute positive meaning to their role, reinforcing their sense of purpose and commitment (Chung et al., 2017).

From a nursing perspective, validated instruments such as the CHEs are particularly valuable in supporting evidence-based practice. Nursing, as a discipline focused on person-centered care, plays a crucial role in identifying caregivers at risk, designing educational interventions, and providing continuous psychosocial support. Given its concise structure and brief administration time, the CHEs is a practical instrument for screening and monitoring caregiver engagement across care settings, including home care, palliative care, and community services.

International organizations such as the WHO and the International Test Commission advocate for adapting validated instruments rather than creating new ones, as this promotes measure standardization, facilitates cross-cultural comparisons, and reduces construction bias (Borsa et al., 2012; ITC, 2017). The CHE, with its strong theoretical foundation and prior use in different cultural contexts, is particularly suitable for adaptation to Portuguese-speaking populations.

Despite promising results, some limitations should be acknowledged. The sample was limited to the municipality of Porto, which may restrict the generalizability of results to caregivers across Portugal. Although the validation of the CHEs is robust, future studies should include more diverse samples representing different regions, care contexts, and age groups. Additionally, longitudinal research is recommended to monitor changes in engagement over time and to assess the effectiveness of nursing interventions aimed at enhancing self-efficacy and reducing burden, thereby reinforcing the scale's clinical applicability.

Overall, the Portuguese version of the CHEs is a psychometrically sound and culturally appropriate instrument with strong potential for clinical use. Its brevity and ease of application make it suitable for incorporation into assessment and intervention protocols for family caregivers. The systematic use of the scale can support nursing practice by identifying engagement profiles, enabling interventions that better align with caregivers' needs, and fostering family health. Nevertheless, future research involving larger and more diverse samples, as well as longitudinal designs, is encouraged to further strengthen the external validity of the scale and evaluate the impact of engagement-focused interventions across care settings.

Conclusion

Engagement is a multifaceted construct characterized by considerable complexity and contextual specificity; therefore, raising health professionals' awareness of its importance is essential for strengthening effective care partnerships centered on the care recipient's autonomy and well-being. The Portuguese version of the CHEs has demonstrated reliability, validity, and sensitivity in assessing caregiver engagement from the caregiver's own perspective. Its use is recommended, as it offers a unique lens for understanding the transition into the caregiving role and contributes to advancing knowledge in this field. The findings of this study, together with the validated

instrument, may assist health professionals, particularly nurses, in identifying engagement levels and guiding customized interventions that enhance care quality. To further reinforce the robustness of the instrument, future studies with larger and geographically diverse samples are encouraged.

Thesis/Dissertation

This article is derived from the master's thesis *O engagement do familiar cuidador de pessoas adultas dependentes em contexto domiciliário*, currently being developed at the Faculty of Health Sciences and Nursing, Universidade Católica Portuguesa – Porto.

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