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Care Competency Scale for Family Caregivers in Home Palliative Care: Turkish Adaptation, Validity, and Reliability Study

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ABSTRACT

Background: Palliative care aims to improve the quality of life of patients with life-threatening illnesses and their families. In home-based palliative care, family members often assume primary caregiving roles, making the assessment of their caregiving competence essential for safe and effective care. This study aimed to adapt the Care Competency Scale for Family Caregivers in Home Palliative Care (CCSHPC) into Turkish and evaluate its psychometric properties.

Methods: A methodological study was conducted with primary caregivers of patients receiving home-based palliative care. Data were collected through face-to-face interviews in participants' homes. The psychometric properties of the Turkish version of the CCSHPC were evaluated using content validity, construct validity, and reliability analyses.

Results: The Turkish version of the CCSHPC demonstrated satisfactory content validity. Exploratory and confirmatory factor analyses supported a stable six-factor structure consistent with the original scale. The scale showed acceptable internal consistency and test–retest reliability, indicating that it provides valid and reliable measurements of caregiving competence in the Turkish context.

Conclusion: The Turkish version of the CCSHPC is a valid and reliable instrument for assessing caregiving competence among family caregivers in home-based palliative care. The scale can be used in clinical practice to identify caregivers' educational and support needs and to guide the development of targeted nursing interventions.

Keywords: Caregivers, palliative care, hospice, nursing, home care services, psychometrics.

BACKGROUND

Palliative care is a holistic, multidisciplinary approach that aims to enhance the quality of life of individuals with life-threatening illnesses and

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their families by addressing physical, psychological, social, and spiritual needs.[1] Home-based palliative care has gained importance, particularly for individuals with advanced chronic or terminal illnesses, as it supports continuity of symptom management and reduces unnecessary institutional care.[2]

Family caregivers play a central role in the delivery of palliative care at home. In many settings where professional support is limited, caregivers assume complex daily care responsibilities, which may lead to physical fatigue, emotional distress, social isolation, and financial strain.[3] These challenges can intensify when caregiving competence is insufficient. Insufficient caregiving competence may adversely affect caregiver well-being and patient outcomes, including pain control, symptom management, and overall quality of life.[4]

Care competence refers to caregivers' knowledge, skills, attitudes, and self-efficacy in performing safe and effective care practices.[5] Evidence shows that higher competence is associated with better symptom control, prevention of complications, and enhanced quality of life.[6] Additionally, competent caregiving reduces care burden and burnout, while decreasing reliance on professional services.

Despite the importance of this concept, there is no validated Turkish instrument designed to measure the care competence of family caregivers providing home palliative care, particularly in the context of pain and symptom management. Existing studies mostly focus on burden, stress, or quality of life rather than competence itself.[7] Cultural differences in family roles, values, and caregiving practices also limit the direct use of international scales without cultural adaptation. This highlights the need for a reliable and valid tool tailored to the Turkish context.

The home palliative care process is complex and significantly affects both patients and caregivers. Caregivers' knowledge, skills, and confidence directly influence the quality, safety, and sustainability of home care services.[8] Therefore, measurement tools that evaluate care competence are needed in clinical practice, education, and research, yet Turkey still lacks a culturally adapted scale for this purpose.

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Accordingly, this study aimed to adapt the “Care Competency Scale for Family Caregivers in Home Palliative Care” (CCSHPC), originally developed in China, into Turkish and to evaluate its psychometric properties.[9] It is expected that the validated Turkish version will support the identification of caregivers’ educational needs and guide the development of support programs in home-based palliative care.

METHODS

Population and sample of the study

The study was conducted using a methodological design. The study population initially consisted of the primary caregivers of 682 patients receiving home palliative care services from the home health unit of a state hospital in Kütahya, Turkey, between September 15 and November 15, 2025. After the evaluation of the inclusion criteria (being a caregiver of a patient receiving home palliative care, n=41; being a primary or first-degree caregiver, n=85; ability to read and understand Turkish, n=17) and the exclusion criteria (being a professional healthcare worker, n=4; having limitations in mental or cognitive functions, n=19; working in professional care institutions, n=12), a total of 178 individuals were excluded because they did not meet the eligibility requirements. Subsequently, 62 individuals were excluded due to missing data and 22 due to duplicate records. As a result, the final analytical sample consisted of 420 family caregivers.

Sample size estimation was conducted using G*Power 3.1 software. Assuming a medium effect size (f = 0.30), α = 0.05, and a statistical power of 0.99, the minimum required sample size was calculated as 358 participants.[10] In addition, in line with commonly accepted recommendations for scale adaptation studies (at least 5–10 participants per item), the final sample of 420 caregivers was considered sufficient for robust psychometric evaluation.[11]

Participants were recruited through purposive sampling from caregivers registered in the hospital’s home health unit, with attention to accessibility, voluntariness, and active involvement in caregiving.[12]

The inclusion criteria for the study were as follows:

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- Being the primary family caregiver of a patient receiving home-based palliative care,
- The patient having an expected survival of ≤ 6 months,
- Providing at least 8 hours of daily care,
- Being 18 years of age or older,
- Having the ability to read and understand Turkish,
- Providing written informed consent.

Exclusion criteria are as follows:

- Being a professional healthcare worker,
- Having severe cognitive or psychiatric impairment,
- Working in a professional care institution.

Data collection tools

Personal information form

A researcher-developed form consisting of seven items was used to collect demographic and clinical characteristics of both caregivers and patients.

Care Competency Scale for Family Caregivers in Home Palliative Care (CCSHPC)

The CCSHPC, developed by Wang et al., was used to assess caregiving competence. The scale comprises 29 items across six subscales: care knowledge, daily care skills, special care skills, caregiving qualities, self-care practices, and acquisition of social supports and resources. Items are rated on a 5-point Likert scale, with higher scores reflecting higher caregiving competence.[9] Written permission for the Turkish adaptation was obtained from the original author.

Zarit Burden Interview (ZBI)

Caregiver burden was measured using the Turkish version of the ZBI. The 22-item scale is scored on a 5-point Likert scale (0–4), yielding total scores between 0 and 88, with higher scores indicating greater perceived burden. The ZBI served as an external criterion for examining convergent validity with the CCSHPC.[13,14]

Data collection

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After obtaining informed consent, face-to-face interviews were conducted in participants' homes over a two-month period. Each interview lasted approximately 40 minutes and included administration of the personal information form and study scales.

Given the vulnerable nature of caregivers in palliative care, interviews were conducted with particular sensitivity. Participants were informed that they could withdraw from the study at any time without providing a reason. If signs of emotional distress were observed, interviews were paused or discontinued in accordance with the participant's preference.

Data assessment

Data were analyzed using SPSS 25 and AMOS 22. Exploratory Factor Analysis (EFA) and reliability analyses were conducted in SPSS, whereas Confirmatory Factor Analysis (CFA) was performed in AMOS. Statistical significance was set at $p \leq 0.05$.

Receiver Operating Characteristic (ROC) analysis was conducted using ZBI scores as an external reference to evaluate the discriminative ability of the CCSHPC across different levels of caregiver burden (cut-offs: 20, 40, and 60). ROC analysis was conducted to provide clinically interpretable thresholds for the CCSHPC and to link its psychometric performance to potential clinical decision-making by examining its ability to discriminate between caregivers with different levels of burden. Sensitivity, specificity, and AUC values were calculated, and optimal cut-off points were identified using Youden's index.

Ethics of the study

Permission for scale adaptation was obtained from the original author. Ethical approval was granted by the Kütahya Health Sciences University Ethics Committee (Decision No: 11/03). Institutional permissions were also secured from the participating centers, and all participants provided written informed consent. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Psychometric assessment

Language validity

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A forward–backward translation procedure was implemented. Two independent translators produced Turkish versions of the scale, which were reconciled and subsequently back-translated by two native English speakers. An expert panel of five nursing academics reviewed the scale for semantic and conceptual equivalence. A pilot test with 20 caregivers was conducted, and minor linguistic adjustments were made accordingly.[11]

Content validity

Content validity was evaluated by experts with at least 10 years of experience in palliative care. Item-level and scale-level content validity indices were calculated (I-CVI = 0.84; S-CVI = 0.92).[15]

Construct validity

Exploratory factor analysis (EFA) was performed using Principal Component Analysis (PCA) with varimax rotation to explore the underlying factor structure of the scale. PCA was used in the exploratory phase because it is widely applied in cross-cultural scale adaptation studies for initial factor extraction and data reduction; however, we acknowledge that common factor extraction methods may be preferable when the primary objective is to model latent constructs.[16] However, it should be noted that PCA is primarily a data-reduction technique rather than a true latent variable model. Subsequently, confirmatory factor analysis (CFA) was conducted to test the six-factor model.[17]

Reliability

Internal consistency was assessed using Cronbach's α, McDonald's ω, item–total correlations, split-half reliability, and test–retest analysis (two-week interval, n = 50).[18]

RESULTS

Table 1 presents the descriptive characteristics of the 420 family caregivers included in the study. The majority of participants were female (63.8%), with a mean age of 48.33 ± 8.66 years. Most caregivers were married (79.8%) and reported a middle socioeconomic status (63.8%). In terms of educational background, 58.3% were high school graduates. Nearly half of the caregivers were the patient's daughter (44.3%), and

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23.3% of patients had a cancer diagnosis. Overall, these findings suggest that home-based palliative care in this setting is largely provided by middle-aged women within the family.

Validity

EFA and CFA were conducted to evaluate the construct validity of the Turkish version of the CCSHPC.

EFA results indicated that the data were suitable for factor analysis (KMO = 0.83; Bartlett's test $\chi^2 = 8704.79$, $p \leq 0.001$). Factor loadings ranged from 0.64 to 0.93, and the six-factor structure explained 72.75% of the total variance (Supplementary Table 1 and Supplementary Table 2).

The six-factor structure derived from EFA was subsequently tested using CFA. The model demonstrated acceptable fit to the data (Table 2), and the standardized factor structure is illustrated in Figure 1. Together, the EFA and CFA findings support the preservation of the original factor structure in the Turkish context and indicate satisfactory structural validity of the adapted scale.

Reliability

Internal consistency of the CCSHPC was satisfactory. The overall Cronbach's α was 0.80, and McDonald's ω was 0.84. Subscale reliability coefficients ranged from 0.85 to 0.94, indicating good to excellent internal consistency across all dimensions. Item–total correlation coefficients ranged from 0.53 to 0.88, suggesting that all items contributed meaningfully to the overall scale (Supplementary Table 2).

Test–retest reliability, assessed over a two-week interval (n = 50), yielded a correlation coefficient of 0.92, demonstrating high temporal stability. Split-half reliability also indicated a significant positive correlation between the two halves of the scale. Overall, these results confirm that the Turkish version of the CCSHPC provides consistent and stable measurements over time.

ROC Analysis Results

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A significant negative correlation was observed between CCSHPC and ZBI scores ($r < 0$; $p < 0.001$), supporting the expected inverse relationship between caregiving competence and caregiver burden.

ROC analyses were performed to evaluate the discriminative ability of the CCSHPC across levels of caregiver burden. The scale showed excellent performance in distinguishing caregivers with varying levels of competence:

- For caregivers with minimal burden (ZBI ≤ 20), the optimal cut-off was ≥108 (AUC = 0.94, 95% CI = 0.92–0.96).

- For caregivers with low-to-moderate burden (ZBI ≤ 40), the optimal cut-off was ≥72 (AUC = 0.95, 95% CI = 0.94–0.97).

- For caregivers with higher burden levels (ZBI ≤ 60), the optimal cut-off was ≥36 (AUC = 0.98, 95% CI = 0.96–0.99).

ROC curves are presented in Supplementary Figure 1. These thresholds may assist clinicians in identifying caregivers who may benefit from additional training or psychosocial support.

DISCUSSION

This study evaluated the validity and reliability of the Turkish version of the CCSHPC. To our knowledge, this is the first psychometrically validated instrument in Turkey specifically designed to assess caregiving competence among family caregivers providing home-based palliative care. While previous Turkish studies have primarily focused on caregiver burden, stress, or quality of life, the present study provides a direct and structured assessment of caregiving competence, thereby addressing an important gap in both clinical practice and research.

The EFA and CFA analyses supported a six-factor structure that was consistent with the original scale. The proportion of explained variance and the overall pattern of factor loadings indicate that the conceptual domains of care knowledge, daily care skills, special care skills, caregiving qualities, self-care practices, and acquisition of social supports and resources are also relevant and meaningful within the Turkish cultural context. These findings suggest that the core dimensions of caregiving competence, as conceptualized in the original Chinese

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instrument, are largely transferable across cultures, despite differences in family structures and caregiving traditions.[9]

The preservation of the original factor structure is particularly noteworthy given the strong family-centered care culture in Turkey, where caregiving responsibilities are often shared among close relatives and are deeply embedded in social norms. This cultural context may have contributed to the high coherence observed in subscales such as caregiving qualities and self-care practices, which reflect both emotional commitment and self-management in caregiving.[19]

The Turkish version of the CCSHPC demonstrated satisfactory internal consistency and high test–retest reliability, indicating that the scale provides stable and consistent measurements over time. These results support the use of the instrument in both cross-sectional assessments and longitudinal evaluations of caregiver competence, for example in intervention or training studies.[20]

From a clinical perspective, the CCSHPC provides a structured framework for identifying specific strengths and gaps in caregivers' competencies in home-based palliative care. Subscale scores can guide nurses in planning individualized educational interventions, particularly in areas such as symptom management, daily care skills, and caregivers' self-care practices. By systematically assessing caregiving competence, healthcare professionals can identify caregivers who may require additional training, closer follow-up, or psychosocial support, thereby enabling more targeted and efficient use of resources.[19]

At an organizational level, the CCSHPC can be integrated into routine home palliative care assessments to support evidence-based care planning, facilitate early detection of care-related risks, and enhance patient safety. The instrument may also serve as a valuable outcome measure for evaluating caregiver education programs and nursing-led support interventions in home health services.[21]

The ROC analyses provided additional evidence of the scale's discriminative validity by demonstrating that higher CCSHPC scores were consistently associated with lower caregiver burden. The proposed cut-off

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points offer preliminary, clinically interpretable guidance for categorizing caregivers according to their competence level. They may help clinicians prioritize caregivers who require additional education or psychosocial support. These thresholds may be particularly useful in home-based palliative care settings, where systematic assessment of caregiver competence can inform individualized care planning and resource allocation. These cut-off points can be used in routine home palliative care assessments to stratify caregivers according to their support needs and to prioritize individualized educational or psychosocial interventions, complementing clinical judgment in identifying caregivers who may require additional support.[19,21]

Beyond its national relevance, this study contributes to the international literature on caregiver competence measurement by demonstrating that the CCSHPC can be successfully adapted to a different cultural and healthcare context. The comparability of the Turkish factor structure with that of the original instrument facilitates cross-cultural research on caregiving competence and enables meaningful comparisons across countries. The preservation of the original six-factor structure in the Turkish sample aligns with the conceptual framework proposed in the original validation study, suggesting that the core dimensions of caregiving competence in home-based palliative care are not confined to a single cultural setting. At the same time, caregiving practices remain shaped by local social norms, family structures, and health system characteristics, which should be considered when interpreting cross-cultural findings.[9,21]

By providing a culturally adapted yet conceptually comparable Turkish version of the CCSHPC, this study creates a common measurement basis for future multinational research. Systematic use of the scale across different countries may deepen understanding of how cultural, social, and health system factors influence caregivers' competencies and support needs. Such comparative evidence can inform the development of culturally sensitive caregiver education programs and contribute to

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international discussions on best practices in family-centered palliative care.[9]

This study was conducted in a single city and within one home health unit; therefore, the findings may not fully represent all regions of Turkey. Future studies involving diverse geographic and cultural settings are needed to strengthen generalizability. The study relied on self-reported data, which may be subject to social desirability or recall bias. Although the scale demonstrated strong psychometric properties, qualitative research could provide deeper insight into caregivers' lived experiences of competence and its determinants. Moreover, while PCA is frequently used in scale adaptation studies, it is primarily a data-reduction technique rather than a latent variable model; therefore, future studies may consider common factor extraction methods to further examine the scale structure. Finally, family size and potential intrafamilial conflicts related to caregiving were not directly assessed and may warrant further investigation.

CONCLUSION

The Turkish version of the CCSHPC is a valid and reliable instrument for assessing the caregiving competence of family caregivers in home-based palliative care. The scale can be used in routine clinical practice to identify caregivers' educational and support needs, guide individualized nursing interventions, and support family-centered care planning in palliative care settings.

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List of abbreviations

Care Competency Scale for Family Caregivers in Home Palliative Care: CCSHPC

Content Validity Index: CVI

Zarit Burden Interview: ZBI

Declarations

Ethics approval and consent to participate: Ethical approval was obtained from the Kütahya Health Sciences University Non-Interventional Research Ethics Committee (Approval No: 2025/11-03) and from the participating hospital. All participants were informed about the aims and

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procedures of the study, and written informed consent was obtained from all participants. The study was conducted in accordance with the principles of the Declaration of Helsinki.

Consent for publication: Not applicable.

Availability of data and materials: The datasets generated and/or analyzed during the current study are not publicly available due to ethical restrictions but are available from the corresponding author on reasonable request.

Competing interests: The authors have no competing interests to declare that are relevant to the content of this article.

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Authors' contributions: Serkan Budak: conceptualization, methodology, project administration, investigation, validation, analysis, writing – original draft, writing – review and editing. **Yasemin Karacan:** conceptualization, methodology, resources, writing – review and editing, supervision. **İsmail Bacak:** conceptualization, methodology, resources, writing – review and editing, supervision. **Şenay Özer:** resources, investigation (pre-screening), writing – review and editing.

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TABLES

Table 1. Individual Characteristics of Caregivers

Variables		N	%
Gender	Female	268	63,8
	Male	152	36,1
Educational Status	Primary Education	84	20,0
	Secondary Education	245	58,3
	Higher Education	91	21,7
Marital Status	Single	85	20,2
	Married	335	79,8
Economic Status	Good	96	22,9
	Medium	268	63,8
	Bad	56	13,3
Relationship to the person you care for	Daughter	186	44,3
	Son	115	27,4
	Spouse	98	23,3
	Others	21	5,0
Diagnosis of the person you care for	Alzheimer	40	9,5
	DM	68	16,2
	HT	43	10,2
	Cancer	98	23,3
	COPD	35	8,3
	HF	36	8,6
	Stroke	67	16,0
	Others	33	7,9
Age	**Mean±SD**	48,33±8,66	
	Minimum-Maximum	32,00-63,00	
CCSHPC Total Point	**Mean±SD**	87,44±13,29	
	Minimum-Maximum	16,00-139,00	
ZBI Total Point	**Mean±SD**	44,64±14,92	
	Minimum-Maximum	4,00-84,00	

DM:Diabetes Mellitus; HT:Hypertension; COPD:Chronic obstructive pulmonary disease; HF:Heart failure; SD:Standart Deviation.

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Table 2. CCSHPC confirmatory factor analysis results

Model Fit Criteria	Estimated	Appropriate	Acceptable
X^2/df	2,465	≤3	≤5
Comparative Fit Indices			
RMSEA	0,055	≤0,05	≤0,08
NFI	0,917	≥0,95	≥0,90
CFI	0,965	≥0,97	≥0,95
IFI	0,965	≥0,95	≥0,90
TLI	0,955	≥0,95	≥0,90
Absolute Fit Indices			
GFI	0,905	≥0,90	≥0,85
Residual-based Fit Indices			
RMR	0,07	≤0,05	≤0,08

RMSEA: Root Mean Square Error of Approximation; NFI: Normalized Fit Index; CFI:Comparative Fit Index; IFI:Incremental Fit Index; TLI:Tucker-Lewis Index; GFI:Goodness Of Fit Index; RMR:Root Mean Square Residual.

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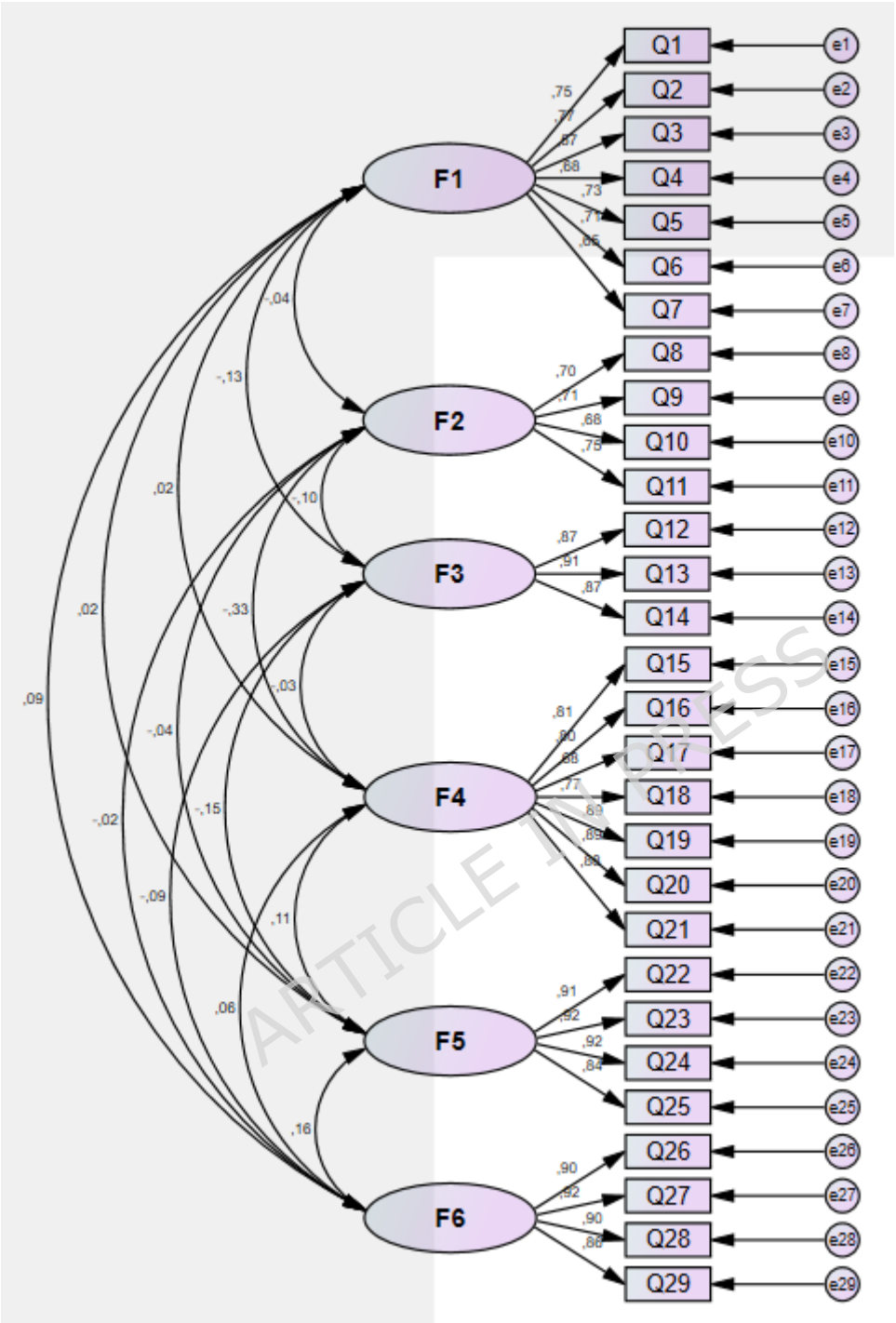
Figure 1. PATH diagram regarding the factor structure of the scale



Chi-square=892.330, df=362, p=0.000, RMSEA=0.055.
F1:Care knowledge; F2:Daily care skills; F3:Special care skills; F4:Caregiving qualities; F5:Self-care practices; F6:Acquisition of social supports and resources.