



# Psychometric properties of the Turkish version of the pediatric-friendly care assessment scale in the emergency department

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## ARTICLE INFO

### Article history:

Received 26 March 2026

Revised 10 May 2026

Accepted 6 June 2026

Available online xxxx

### Keywords:

Emergency department

Nurse

Pediatric-friendly care

Validity

Reliability

## ABSTRACT

**Aim:** This study aimed to adapt and evaluate the validity and reliability of the Pediatric-Friendly Care Assessment Scale in the Emergency Department, which assesses nurses' perceptions of the importance of pediatric-friendly care.

**Method:** This methodological study was conducted with 301 nurses working in pediatric emergency departments. Linguistic adaptation was performed using forward-backward translation, and content validity was evaluated using the Davis technique. Construct validity was assessed through confirmatory factor analysis (CFA). Reliability was examined using Cronbach's alpha, split-half method, and Spearman-Brown and Guttman coefficients. Additionally, item-total correlations and known-group comparisons were conducted.

**Results:** The mean age of the participants was  $39.35 \pm 5.80$  years, and 82.1% were female. The scale-level content validity index was found to be 0.98 based on expert evaluations. CFA results showed that the model fit was acceptable (CMIN/DF = 2.485, RMSEA = 0.070, CFI = 0.88, IFI = 0.88, GFI = 0.83, NFI = 0.82, TLI = 0.86). The Cronbach's alpha coefficient of the total scale was 0.93, and the alpha values for the sub-dimensions ranged from 0.60 to 0.84. Item-total scale score correlations were between 0.25 and 0.79.

**Conclusion:** The findings indicate that the Turkish form of the scale is a valid and reliable tool for evaluating nurses' perceptions of the importance of pediatric-friendly care in pediatric emergency departments.

### Implications for practice

The scale can be used to evaluate pediatric-friendly care practices in pediatric emergency departments and to guide training and quality improvement initiatives in this field.

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## Introduction

One of the critical components of high-quality pediatric nursing care is the creation and maintenance of a child-friendly environment (Chen, Liang, et al., 2025; Huang et al., 2025). The literature indicates that designing and implementing a child-friendly environment significantly improves pediatric patients' healthcare experiences and clinical outcomes as well as those of their families (Chen & Chen, 2023; Fang et al., 2020). Furthermore, it is noted that such environments enhance children's emotional well-being and support their ability to cope with stress and anxiety (Liang et al., 2024; Sanchez Cristal et al., 2018). Implementing child-friendly care in emergency settings is challenging due to time constraints and the complexity of medical procedures (Chen & Chen, 2023; Liang et al., 2024). Pediatric emergency departments are among the most stressful healthcare environments for

children, where pain, uncertainty, separation anxiety, and environmental stressors may adversely affect their physiological and psychosocial well-being (Chen, 2023; Chen, Liang, et al., 2025; Huang et al., 2025; Liang et al., 2024). Since children have developmental and emotional needs distinct from adults, care should be delivered through a child-centered and psychosocially sensitive approach (Fang et al., 2020; Huang et al., 2025). Child-friendly care is therefore defined as a holistic approach that supports the child's sense of security, comfort, and control while actively involving the family and adapting the care environment to the child's developmental needs (Chen & Chen, 2023; Goltz & Hopkinson, 2016).

Nurses have a key role in implementing child-friendly care in emergency departments (Huang et al., 2025; Liang et al., 2024). The child-friendly care approach is based on four core components: appropriate language use, provision of information, procedural support, and comfortable positioning (Chen, Liang, et al., 2025; Goltz & Hopkinson, 2016). Child-friendly language involves using clear, concise, and directive language, avoiding complex terminology, and focusing on the

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child's sensory experiences (Chen, Liang, et al., 2025; Goltz & Hopkinson, 2016). In the information provision process, content and timing are adapted to the child's developmental level. In addition, the child is supported in developing a sense of mastery over the process by allowing them to safely explore the equipment used (Chen, Liang, et al., 2025, Chen, Tseng, et al., 2025; Goltz & Hopkinson, 2016). Procedural support includes encouraging positive coping strategies such as breathing techniques and imagery. Comfortable positioning allows healthcare professionals to intervene safely while considering the child's need to be close to their caregiver and avoiding the supine position (Goltz & Hopkinson, 2016; Liang et al., 2024). Effective communication with children and their families, clear explanations of procedures, psychosocial support, play-based approaches, and family-centered care practices are known to reduce children's anxiety in emergency settings (Chen & Chen, 2023; Ozturk & Merter, 2024). However, the fast-paced nature of emergency departments, staff shortages, high patient volume, and limited physical resources may hinder the consistent implementation of these practices (Ahmed et al., 2025; Ozturk & Merter, 2024). Expanding child-friendly care practices has been associated with improved treatment adherence, better pain and anxiety management, increased family satisfaction, and reduced traumatic hospital experiences (Liang et al., 2024; Ozturk & Merter, 2024; Sanchez Cristal et al., 2018). Therefore, evaluating nurses' perceptions and practices regarding child-friendly care is essential for integrating these approaches into routine emergency care (Chen, Liang, et al., 2025). Nevertheless, studies examining nurses' perceptions of child-friendly care in pediatric emergency departments remain limited, partly due to the lack of valid and reliable assessment tools (Chen, Tseng, et al., 2025; Huang et al., 2025). This gap highlights the need for standardized instruments to support both clinical practice and research in pediatric emergency care.

In the Turkish healthcare context, pediatric emergency departments may face challenges such as high patient density, limited physical resources, and time-intensive clinical demands, which may hinder the consistent implementation of child-friendly care practices. In addition, cultural characteristics such as strong family involvement in child care, parental expectations regarding communication and emotional support, and the need for developmentally appropriate interactions may further influence the delivery of pediatric emergency services. Although child-friendly care has gained increasing attention internationally, there is limited evidence regarding how nurses in Türkiye perceive the importance of these practices within emergency settings. Therefore, evaluating these perceptions using a culturally adapted and psychometrically sound instrument is essential for identifying existing gaps in practice and supporting the development of evidence-based improvements in pediatric emergency care services. The Turkish adaptation of the "Pediatric-Friendly Care Assessment Scale in the Emergency Department (PFCAS-ED)" is expected to address the lack of a standardized measurement tool for evaluating nurses' perceptions of child-friendly care practices in pediatric emergency settings in Türkiye. The availability of a valid and reliable Turkish version may contribute to assessing educational needs, improving the quality of pediatric emergency nursing care, supporting institutional quality improvement initiatives, and strengthening child- and family-centered care practices. Furthermore, the scale may provide a framework for future national studies examining pediatric emergency care environments and professional competencies related to child-friendly care.

## Materials and methods

### Study design

A methodological study with a descriptive and correlational design was conducted.

### Population and sample

This research was conducted with nurses aged 18–65 years working in pediatric emergency departments of public and university hospitals in three different provinces located in the western, central, and eastern regions of Türkiye. Data were collected between December 2025 and February 2026 using an online questionnaire from participants selected using a convenience sampling method. Prior to data collection, hospital administrations were contacted and informed about the study process. A Google Forms-based online form was prepared to collect the study data. The link to the form was shared with responsible nurses via messaging applications commonly used by them (e.g., WhatsApp, Telegram). Before accessing the questionnaire, participants were informed about the aim and scope of the study, the voluntary nature of participation, confidentiality principles, and their right to withdraw from the study at any stage without penalty. Informed consent was obtained electronically from all participants prior to data collection through an online consent form included on the first page of the questionnaire. Only nurses who provided electronic consent and completed the online questionnaire were included in the study.

The literature generally suggests that in validity and reliability studies for adapting a scale to a different culture, the sample size should be 5–10 times the number of items on the scale (DeVellis, 2016; Polit & Beck, 2017; Tabachnick & Fidell, 2015). Since the scale used in this research consisted of 28 items, the minimum sample size was calculated as 280 participants. A total of 301 nurses who voluntarily agreed to participate in the study were included. Nurses actively working in pediatric emergency departments in Türkiye who voluntarily agreed to participate were included in the study. Completion of the online questionnaire was also an inclusion criterion. Nurses who did not work in pediatric emergency departments, those who were on leave or absent during the data collection process, and participants who submitted incomplete questionnaires were excluded from the study.

### Data collection tools

#### The socio-demographic data collection form

This form was designed to be completed by nurses working in the pediatric emergency department. It consists of nine items assessing age, gender, marital status, education level, institution of employment, total work experience, total work experience in the pediatric emergency department, pediatric-related certification, and work shifts.

#### Pediatric-friendly care assessment scale in the emergency department (PFCAS-ED)

This scale was developed by Chen, Liang, et al. (2025) to assess the perceptions of nurses working in pediatric emergency departments regarding the importance of child-friendly care. It consists of 28 items that measure the level of importance nurses attribute to child-friendly care. Each item is evaluated using a 7-point Likert scale, with options ranging from 1 (very unimportant) to 7 (very important). The construct validity of the scale was assessed using exploratory and confirmatory factor analyses, and the factor loadings of the items were found to range from 0.428 to 0.999. The scale consists of six subdimensions: pediatric/adolescent timely care and resources, child protection mechanisms and safety, pediatric emergency care competency training and practice, pediatric emergency consultation information and space, pediatric crisis management and response, and a harmless environment and actions for toddlers. These subdimensions were found to explain 69.41% of the total variance. The item distribution across the subdimensions is as follows: items 1–7 in the first subdimension; items 8–13 in the second subdimension; items 14–17 in the third subdimension; items 18–20 in the fourth subdimension; items 21–25 in the fifth subdimension; and items 26–28 in the sixth subdimension. According to the results

of the confirmatory factor analysis, the model fit indices were found to be acceptable. It was determined that the CFI and GFI values were above 0.80, while the RMSEA value was below 0.08. The Cronbach's alpha reliability coefficients for the subdimensions of the scale ranged from 0.774 to 0.917. Total scores range from 28 to 196, with higher values indicating that nurses place greater importance on child-friendly care practices. The scale was developed for completion by nurses working in pediatric emergency departments (Chen, Tseng, et al., 2025).

#### Implementation of the study

Before the data collection process, the Turkish language adaptation of the scale, content validity assessment, and pilot testing were carried out. Although the original Pediatric-Friendly Care Assessment Scale in the Emergency Department was initially developed in Chinese, the Turkish adaptation process was conducted using the officially translated English version of the instrument. During the translation process, particular attention was paid to preserving the conceptual meaning of the original items rather than relying solely on literal translation. In the language adaptation process, forward- and back-translation techniques were used to ensure the cultural appropriateness of the scale. In the first stage, the scale was translated from English into Turkish by four experts: two linguists and two academic nurses, all native Turkish speakers with adequate English proficiency. The translated texts were compared and synthesized into a single Turkish version. This form was then translated back into English by two different experts, one linguist and one academic nurse, and the back-translation process was completed. Thus, the conceptual equivalence of the translations was ensured. These procedures were used to support the semantic, linguistic, and conceptual equivalence of the Turkish version with the authorized English version of the original instrument.

To evaluate the content validity of the scale, field experts were consulted. The literature suggests that it is appropriate to consult at least three experts for content validity assessment (Jonhson & Christensen, 2014; Polit & Beck, 2017). Accordingly, 10 experts working in the Department of Pediatric Nursing were consulted. Experts were presented with both the Turkish and English versions of the scale and asked to evaluate each item for content appropriateness. During the evaluation process, items were scored using a four-point scale (1 = not appropriate, 2 = somewhat appropriate, 3 = appropriate, 4 = very appropriate). The scores obtained from the expert evaluations were analyzed using the content validity index (CVI) method.

After making the necessary adjustments based on expert opinions, a pilot study was conducted with 20 pediatric nurses to assess the comprehensibility and applicability of the scale. The pilot study demonstrated that the scale items were comprehensible. No negative feedback was reported by the participants. Data from the pilot study were not included in the validity and reliability analyses.

#### Data analysis

The data obtained within the scope of the study were analyzed using IBM SPSS Statistics version 24.0 (Armonk, NY: IBM Corp.) and IBM AMOS version 24.0 software. Descriptive statistics were used to describe participants' socio-demographic characteristics. The findings were presented using frequencies, percentages, means, standard deviations, and minimum-maximum values. Since the aim of the adaptation study was to evaluate the scale while preserving its original factor structure, exploratory factor analysis was not performed; instead, confirmatory factor analysis (CFA) was performed directly to examine the fit of the existing structure to the sample. Known-group comparisons were performed to evaluate the discriminant validity of the scale. Cronbach's alpha coefficients were calculated for the total scale and subdimensions to determine the internal consistency of the scale. In addition, split-half reliability was applied to evaluate the reliability of the scale, and the relationship between the halves was examined using the Spearman-

Brown coefficient. The significance level was accepted as  $p < .05$  in all statistical analyses.

#### Ethical aspects of the study

To adapt the scale used in the study, written permission was obtained via email from Yen-Ju Chen, one of the developers of the scale, and the necessary information was provided. Ethics committee approval and institutional permissions were obtained from the ethics committee of the university on December 5, 2025 (approval number: 2025/251/1). Participants' personal information was not requested during the research process, and the data obtained were used solely for scientific purposes. At the beginning of the data collection form, participating nurses were informed about the purpose of the research, and it was stated that participation was entirely voluntary. Informed consent was obtained from the nurses who agreed to participate in the study via an online form.

## Results

#### Participants' demographic characteristics

As shown in Table 1, participants' mean age was  $39.35 \pm 5.80$  years (range: 25–55), mean work experience was  $14.77 \pm 5.92$  years, and mean work experience in the pediatric emergency department was  $7.14 \pm 2.57$  years. According to the findings, 82.1% ( $n = 247$ ) of participants were female, 57.8% ( $n = 174$ ) were married, 78.1% ( $n = 235$ ) had an undergraduate degree, and 54.2% ( $n = 163$ ) worked in a public hospital. Furthermore, it was determined that 83.7% ( $n = 252$ ) of participants had a pediatric-related certification and that 40.2% ( $n = 121$ ) worked in shifts.

#### Validity analysis results

The scale items were evaluated by 10 experts using the Davis technique. Based on expert opinions, the item-level content validity index (I-CVI) values were found to range from 0.89 to 1.00, while the scale-level content validity index (S-CVI) was determined to be 0.98.

**Table 1**

Distribution of participants according to their demographic characteristics ( $n = 301$ ).

| Demographic characteristics                                | M $\pm$ SD       | Min.-Max. |
|------------------------------------------------------------|------------------|-----------|
| Age                                                        | 39.35 $\pm$ 5.80 | 25–55     |
| Mean work experience                                       | 14.77 $\pm$ 5.92 | 3–32      |
| Mean work experience in the pediatric emergency department | 7.14 $\pm$ 2.57  | 1–19      |
|                                                            | n                | %         |
| Gender                                                     |                  |           |
| Female                                                     | 247              | 82.1      |
| Male                                                       | 54               | 17.9      |
| Marital status                                             |                  |           |
| Married                                                    | 174              | 57.8      |
| Single                                                     | 127              | 42.2      |
| Education                                                  |                  |           |
| Associate degree                                           | 27               | 9.0       |
| Undergraduate degree                                       | 235              | 78.1      |
| Graduate degree                                            | 39               | 13.0      |
| Institution                                                |                  |           |
| State hospital                                             | 163              | 54.2      |
| University hospital                                        | 138              | 45.8      |
| Pediatric Certifications                                   |                  |           |
| Yes                                                        | 252              | 83.7      |
| No                                                         | 49               | 16.3      |
| Working shifts                                             |                  |           |
| Day                                                        | 95               | 31.6      |
| Night                                                      | 85               | 28.2      |
| Shift work                                                 | 121              | 40.2      |

M: Mean, SD: Standart Deviation.

**Table 2**

Model fit indices of the pediatric-friendly care assessment scale in the emergency department (n = 301).

| Model fit indices | Model fit index values | Acceptable fit index values |
|-------------------|------------------------|-----------------------------|
| CMIN/DF           | 2.485                  | ≤5                          |
| RMSEA             | 0.070                  | ≤0.08                       |
| CFI               | 0.88                   | ≥0.85                       |
| IFI               | 0.88                   | ≥0.85                       |
| GFI               | 0.83                   | ≥0.80                       |
| NFI               | 0.82                   | ≥0.80                       |
| TLI               | 0.86                   | ≥0.80                       |

CMIN: Chi-Square; DF: Degree of Freedom; RMSEA: Root Mean Square Error of Approximation; CFI: Comparative Fit Index; IFI: Incremental Fit Index; GFI: Goodness of Fit Index; NFI: Normed Fit Index; TLI: Tucker-lewis Index.

According to the CFA results, presented in Table 2, the model fit indices for the PFCAS-ED were found to be within acceptable limits. The values for model fit were calculated as follows: CMIN/DF = 2.485, RMSEA = 0.070, CFI = 0.88, IFI = 0.88, GFI = 0.83, NFI = 0.82, and TLI = 0.86.

Fig. 1 shows the factor loading values obtained from the confirmatory factor analysis (CFA) for the six sub-dimensions of the scale. The analysis revealed the factor loading ranges for the sub-dimension as follows: pediatric/adolescent timely care and resources: 0.28–0.78; child protection mechanisms and safety: 0.28–0.85; pediatric emergency care competency training and practice: 0.43–0.59; pediatric emergency consultation information and space: 0.62–0.74; pediatric crisis management and response: 0.23–0.76; and a harmless environment and actions for toddlers: 0.51–0.63. As a sensitivity analysis, CFA was repeated after excluding items with standardized factor loadings below 0.30. This analysis produced only minimal changes in the fit indices; therefore, the original 28-item structure was retained.

As shown in Table 3, nurses who had pediatric certification had a statistically significantly higher mean total scale score ( $M = 170.77$ ,  $SD = 12.45$ ) compared to those who did not ( $M = 154.35$ ,  $SD = 16.72$ ) ( $t = 6.53$ ,  $p < .001$ ). This finding indicates that nurses with pediatric certification have a greater perception of the importance of child-friendly care practices. In addition, the effect size analysis indicated a large effect (Cohen's  $d = 1.24$ ).

#### Reliability analysis results

Table 4 shows that the total Cronbach's alpha coefficient of the Pediatric-Friendly Care Assessment Scale in the Emergency Department was 0.93. In the split-half analysis, the Cronbach's alpha coefficient was calculated as 0.89 for the first half and 0.87 for the second half. Furthermore, the Spearman-Brown and Guttman split-half coefficients were found to be 0.87, and the correlation coefficient between the two halves was determined to be 0.78. When the subdimensions were evaluated, Cronbach's alpha values ranged from 0.60 to 0.84. Specifically, the alpha coefficients were: 0.79 for pediatric/adolescent timely care and resources; 0.84 for child protection mechanisms and safety; 0.60 for pediatric emergency care competency training and practice; 0.78 for pediatric emergency consultation information and space; 0.62 for pediatric crisis management and response; and 0.61 for a harmless environment and actions for toddlers. The Hotelling's  $T^2$  test result was calculated as 335.295 ( $F = 11.342$ ,  $p < .001$ ). Moreover, the inter-item correlation values ranged from 0.024 to 0.805.

Table 5 shows that item-total scale score correlations ranged from 0.25 to 0.79, while item-sub-dimension correlations ranged from 0.20 to 0.83. All correlation values were found to be statistically significant ( $p < .001$ ).

#### Discussion

Content validity is examined to assess the extent to which a measurement instrument represents the intended construct and whether the items adequately cover the content intended to be measured

(DeVellis, 2016; Polit & Beck, 2017; Tabachnick & Fidell, 2015). The content validity index (CVI) is calculated by quantitatively determining the agreement between experts' evaluations of the items, and the literature generally recommends consulting 3–20 experts for this evaluation (Almanasreh et al., 2019; DeVellis, 2016; Jonhson & Christensen, 2014). In this study, the content validity of the scale was evaluated based on the opinions of 10 experts, and both the item-level and scale-level CVIs were calculated. The results showed that the item-level content validity index ranged from 0.89 to 1.00, and the scale-level CVI was 0.98. According to the literature, a content validity index of 0.80 or above indicates a sufficient level of agreement between expert opinions and that the scale is appropriate in terms of content (Almanasreh et al., 2019; Jonhson & Christensen, 2014). Accordingly, the Turkish form of the scale was found to have high content validity.

Although different methods are used to evaluate construct validity, one of the most commonly used methods in the literature is factor analysis (DeVellis, 2016; Kline, 2016). Factor analysis is generally performed using two approaches: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) (Karagöz, 2016). EFA was not conducted in the present study because the Pediatric-Friendly Care Assessment Scale in the Emergency Department has an established theoretical factor structure in its original version. In cross-cultural adaptation studies, CFA is commonly preferred when the aim is to test the fit of an existing model within a different cultural context rather than to explore a new factor structure. Therefore, CFA was used to evaluate whether the original construct of the scale was maintained in the Turkish sample. Although this approach strengthens comparability with the original instrument and supports theoretical consistency, cultural differences may still influence item interpretation and factor relationships. In this study, Yen-Ju Chen, one of the developers of the scale, was contacted, and it was concluded that the factor structure of the original scale should be preserved. Therefore, no changes were made to the original structure of the scale, and construct validity was examined directly with CFA without applying EFA.

In the literature, various fit indices are used to evaluate model fit in confirmatory factor analysis. To achieve an acceptable fit of the model, it is recommended that CMIN/DF < 5, CFI and IFI > 0.85, GFI, NFI, and TLI > 0.80, and RMSEA < 0.08 (Karagöz, 2016; Kartal & Bardakçı, 2018; Kline, 2016). According to the results of the CFA in the present study, the model fit indices were CMIN/DF = 2.485, RMSEA = 0.070, CFI = 0.88, IFI = 0.88, GFI = 0.83, NFI = 0.82, and TLI = 0.86. These values are within the recommended limits and indicate that the model demonstrates an acceptable level of fit (Karagöz, 2016; Kline, 2016; Tabachnick & Fidell, 2015). In the original study of the scale, the fit indices were reported as CMIN/DF = 1.868, GFI = 0.850, AGFI = 0.810, RMSEA = 0.062, and CFI = 0.953 (Chen, Tseng, et al., 2025). These results indicate that the findings obtained from the Turkish form are generally consistent with the factor structure of the original scale. In this study, according to the CFA results, the factor loadings of the items ranged from 0.23 to 0.85. In the original study, the item factor loadings were reported to range from 0.62 to 0.91 (Chen, Tseng, et al., 2025). Although the literature generally recommends factor loadings of 0.30 and above, theoretically important items may still be retained in the model despite lower loadings (DeVellis, 2016; Hair et al., 2014). In the present study, some items demonstrated relatively low factor loadings, which may be associated with cultural differences, linguistic nuances, and variations in pediatric emergency care practices within the Turkish healthcare context. During the CFA process, modification indices and potential model refinements were examined; however, no items were removed solely based on statistical criteria in order to preserve the original structure, theoretical integrity, and comparability of the scale. Furthermore, the retained items were considered conceptually and clinically important for evaluating child-friendly care practices. Overall, the CFA results demonstrated acceptable model fit, and the findings were generally consistent with the factor structure reported in the original study (Chen, Tseng, et al., 2025). The slightly higher fit indices and factor

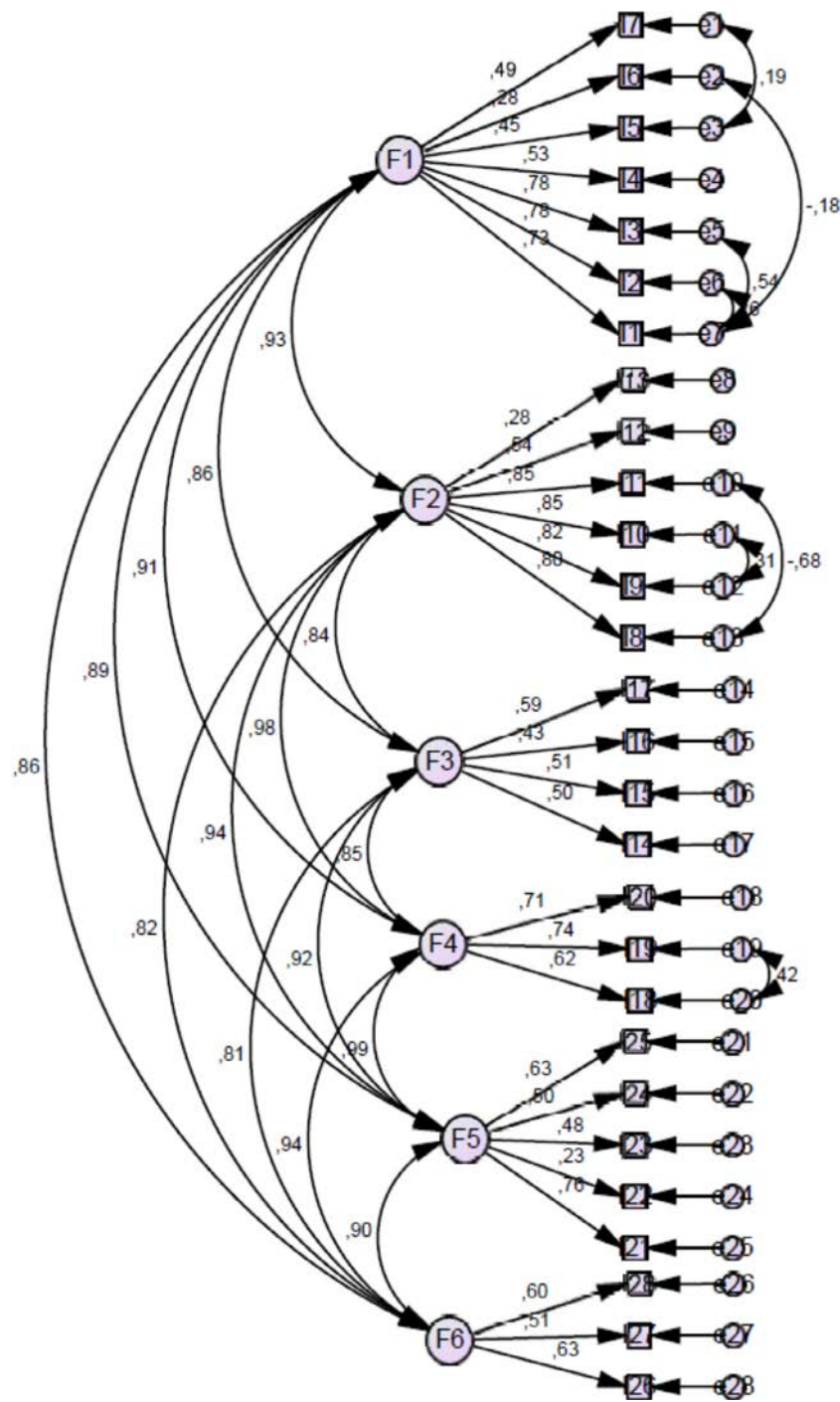


Fig. 1. Results of confirmatory factor analysis of the pediatric-friendly care assessment scale in the emergency department.

loadings reported in the original study may be related to differences in sample characteristics and cultural context. As an additional sensitivity analysis, CFA was repeated after excluding items with standardized factor loadings below 0.30. Although minor changes were observed in fit

**Table 3**  
Comparison of total scale scores according to pediatric certification (n = 301).

| Certification | n   | M ± SD         | t    | p      | Cohen's d |
|---------------|-----|----------------|------|--------|-----------|
| Yes           | 252 | 170.77 ± 12.45 | 6.53 | <0.001 | 1.24      |
| No            | 49  | 154.35 ± 16.72 |      |        |           |

M: mean; SD: standart deviation.

indices, the overall model fit did not improve sufficiently to justify removal of these theoretically important items. Therefore, the original factor structure was retained to preserve comparability with the original scale. This decision was also supported by the acceptable overall CFA fit indices, the clinical relevance of the retained items, and the aim of preserving the conceptual structure of the original instrument in the Turkish adaptation. Previous literature also emphasizes that cultural context and sample characteristics may influence model fit indices and factor loadings in cross-cultural scale adaptation studies (DeVellis, 2016; Tabachnick & Fidell, 2015). Therefore, the findings support the construct validity of the Turkish version of the scale.

**Table 4**

Reliability analysis results of the pediatric-friendly care assessment scale in the emergency department and its sub-dimensions (n = 301).

| Sub-Dimensions | Cronbach's<br>$\alpha$ | Split-Half                         |                                     |                |                    |                                       |
|----------------|------------------------|------------------------------------|-------------------------------------|----------------|--------------------|---------------------------------------|
|                |                        | First Half<br>Cronbach<br>$\alpha$ | Second Half<br>Cronbach<br>$\alpha$ | Spearman-Brown | Guttman split-half | Correlation between<br>the two halves |
| Total scale    | 0.93                   | 0.89                               | 0.87                                | 0.87           | 0.87               | 0.78                                  |
| F1*            | 0.79                   |                                    |                                     |                |                    |                                       |
| F2**           | 0.84                   |                                    |                                     |                |                    |                                       |
| F3***          | 0.60                   |                                    |                                     |                |                    |                                       |
| F4****         | 0.78                   |                                    |                                     |                |                    |                                       |
| F5*****        | 0.62                   |                                    |                                     |                |                    |                                       |
| F6*****        | 0.61                   |                                    |                                     |                |                    |                                       |

F1\* pediatric/adolescent timely care and resources.

F2\*\* child protection mechanisms and safety.

F3\*\*\* pediatric emergency care competency training and practice.

F4\*\*\*\* pediatric emergency consultation information and space.

F5\*\*\*\*\* pediatric crisis management and response.

F6\*\*\*\*\* a harmless environment and actions for toddlers.

As a result of the known-groups comparison, it was determined that nurses who had pediatric certification had significantly higher mean total scale scores than those who did not. This suggests that nurses with education or certification in pediatrics may have greater awareness and perceptions of child-friendly care practices. The literature also indicates that professional training and certification programs positively influence nurses' knowledge, clinical awareness, and attitudes toward care practices (DeVellis, 2016; Polit & Beck, 2017). Furthermore, known-groups comparison is a commonly used method in scale studies to evaluate discriminant validity and reveals the ability of the scale to differentiate between groups with different characteristics (Polit & Beck, 2017; Tabachnick & Fidell, 2015). These findings support the

discriminant validity of the scale. Furthermore, the large effect size observed in the known-group comparison (Cohen's  $d = 1.24$ ) indicates that the difference between nurses with and without pediatric-related certification was not only statistically significant but also practically meaningful. According to Cohen's classification, effect size values above 0.80 are considered large, supporting the discriminative validity of the scale (Cohen, 1988).

In adaptation studies of Likert-type scales, internal consistency analyses are used to determine the degree of consistency between the items constituting the scale and the reliability of the measurement instrument (Jonhson & Christensen, 2014; Karagöz, 2016). One of the most commonly used methods for evaluating internal consistency is the Cronbach's alpha coefficient, which reflects the level of fit between the items of the scale (Kartal & Bardakçi, 2018; Tabachnick & Fidell, 2015). In this study, the total Cronbach's alpha coefficient of the PFCAS-ED was 0.93. A Cronbach's alpha value of 0.70 and above indicates that the scale is sufficiently reliable, while values of 0.80 and above indicate a high level of internal consistency (Jonhson & Christensen, 2014; Tabachnick & Fidell, 2015). Accordingly, the result demonstrates that the Turkish form of the scale has a high level of reliability. The Cronbach's alpha coefficients for the subdimensions ranged from 0.60 to 0.84. Cronbach's alpha values of 0.60 and above for subdimensions indicate acceptable internal consistency (Karagöz, 2016; Kartal & Bardakçi, 2018). Accordingly, the findings show that the subdimensions of the scale also have a sufficient level of internal consistency. Accordingly, the findings show that the total scale has high internal consistency, while the subdimensions demonstrate acceptable but variable levels of internal consistency. The reliability coefficients obtained in this study are generally similar to the values reported in the original study in which the scale was developed (Chen, Tseng, et al., 2025) (0.77–0.91). This indicates that the scale can provide reliable measurements in the Turkish sample, both at the overall scale level and at the subdimension level, and that its internal consistency is at an acceptable level.

In addition to internal consistency analyses, the split-half method was also used to evaluate the reliability of the scale (Kline, 2016; Tabachnick & Fidell, 2015). The analysis revealed that the Cronbach's alpha coefficients for the two halves of the scale were approximately 0.89 and 0.87, respectively. Furthermore, the Spearman–Brown and Guttman split-half coefficients were found to be 0.87, and the correlation coefficient between the two halves was 0.78. According to the literature, coefficients of 0.70 and above support the reliability of the measurement instrument (Kartal & Bardakçi, 2018). Accordingly, these findings demonstrate that the Turkish form of the scale has a high level of internal consistency. Accordingly, these split-half reliability findings further support the internal consistency of the Turkish version of the scale. However, since the original study in which the scale was

**Table 5**

Item-total score and sub-dimension total score correlations of the pediatric-friendly care assessment scale in the emergency department (n = 301).

| Items | Item-subdimension total score correlations |      |       |        |         |         | Item total score<br>correlations |
|-------|--------------------------------------------|------|-------|--------|---------|---------|----------------------------------|
|       | F1*                                        | F2** | F3*** | F4**** | F5***** | F6***** |                                  |
| I1    | 0.62                                       |      |       |        |         |         | 0.67                             |
| I2    | 0.67                                       |      |       |        |         |         | 0.70                             |
| I3    | 0.68                                       |      |       |        |         |         | 0.73                             |
| I4    | 0.50                                       |      |       |        |         |         | 0.53                             |
| I5    | 0.46                                       |      |       |        |         |         | 0.44                             |
| I6    | 0.26                                       |      |       |        |         |         | 0.27                             |
| I7    | 0.48                                       |      |       |        |         |         | 0.47                             |
| I8    |                                            | 0.66 |       |        |         |         | 0.72                             |
| I9    |                                            | 0.77 |       |        |         |         | 0.77                             |
| I10   |                                            | 0.83 |       |        |         |         | 0.79                             |
| I11   |                                            | 0.68 |       |        |         |         | 0.75                             |
| I12   |                                            | 0.50 |       |        |         |         | 0.52                             |
| I13   |                                            | 0.30 |       |        |         |         | 0.28                             |
| I14   |                                            |      | 0.35  |        |         |         | 0.46                             |
| I15   |                                            |      | 0.40  |        |         |         | 0.45                             |
| I16   |                                            |      | 0.34  |        |         |         | 0.41                             |
| I17   |                                            |      | 0.38  |        |         |         | 0.51                             |
| I18   |                                            |      |       | 0.66   |         |         | 0.60                             |
| I19   |                                            |      |       | 0.71   |         |         | 0.69                             |
| I20   |                                            |      |       | 0.53   |         |         | 0.65                             |
| I21   |                                            |      |       |        | 0.50    |         | 0.67                             |
| I22   |                                            |      |       |        | 0.20    |         | 0.25                             |
| I23   |                                            |      |       |        | 0.32    |         | 0.46                             |
| I24   |                                            |      |       |        | 0.42    |         | 0.49                             |
| I25   |                                            |      |       |        | 0.53    |         | 0.61                             |
| I26   |                                            |      |       |        |         | 0.45    | 0.54                             |
| I27   |                                            |      |       |        |         | 0.40    | 0.45                             |
| I28   |                                            |      |       |        |         | 0.39    | 0.55                             |

F1\* pediatric/adolescent timely care and resources.

F2\*\* child protection mechanisms and safety.

F3\*\*\* pediatric emergency care competency training and practice.

F4\*\*\*\* pediatric emergency consultation information and space.

F5\*\*\*\*\* pediatric crisis management and response.

F6\*\*\*\*\* a harmless environment and actions for toddlers.

developed did not include split-half analysis, a direct comparison of the results could not be made (Chen, Tseng, et al., 2025).

Item-total score correlation shows the relationship of each item on the scale to the total scale score, revealing the extent to which the item represents the construct intended to be measured (Karagöz, 2016; Kartal & Bardakçı, 2018). The literature indicates that an item-total correlation coefficient of 0.20 or higher shows that the item is consistent with the construct that the scale aims to measure (Jonhson & Christensen, 2014; Karagöz, 2016; Kline, 2016). In this study, the item-total scale score and item-subdimension total score correlations were found to be above 0.20. These results indicate that the items are sufficiently discriminatory in terms of representing the scale as a whole. Similarly, in the original study of the scale, item-total score correlations were also reported to be above 0.20 (Chen, Tseng, et al., 2025). When these findings are considered together, it can be concluded that the items of the scale consistently reflect the intended construct, both in the original form and in the Turkish adaptation.

The Turkish version of the scale should primarily be interpreted as a measure of nurses' perceptions regarding the importance of child-friendly care rather than a direct indicator of actual clinical performance or nursing quality. Nevertheless, higher scale scores may reflect increased awareness and sensitivity toward child-friendly care practices in pediatric emergency settings. Therefore, the scale may contribute to identifying educational needs, evaluating professional awareness, and supporting quality improvement initiatives in pediatric emergency care. Future studies examining the relationship between scale scores and observed clinical behaviors, patient outcomes, or quality-of-care indicators may provide additional evidence regarding the clinical utility of the instrument.

### Limitations

This research has several limitations. The collection of data via self-report and online survey methods may have led to response bias. Furthermore, due to the cross-sectional design of the study, the stability of the scale over time could not be assessed using a test-retest method. Although the sample size was adequate for the psychometric analyses, the absence of test-retest reliability remains a limitation because the temporal stability of the scale could not be evaluated. Another limitation is that criterion-related validity was not examined because no external observational measure of pediatric-friendly nursing performance or quality-of-care indicator was used. Therefore, the scale scores should be interpreted as nurses' perceived importance of pediatric-friendly care rather than direct evidence of actual clinical performance.

### Implications for practice

The findings of this research reveal that the Pediatric-Friendly Care Assessment Scale in the Emergency Department is a valid and reliable measurement tool for evaluating the perceptions of nurses working in pediatric emergency departments regarding child-friendly care practices. Accordingly, the scale can be used as an important assessment instrument for determining nurses' awareness levels regarding pediatric-friendly care, identifying training needs, and pinpointing areas for improvement in clinical practice. The data obtained from the scale can contribute to monitoring the quality of care provided in pediatric emergency departments, enhancing nursing services, and strengthening the child-centered care approach. Furthermore, findings indicating that certified training in pediatrics positively influences nurses' perceptions of child-friendly care highlight the need for planning in-service training programs and supporting specialization. In this context, the scale can guide the development of training and practice programs by determining the knowledge and awareness levels of nurses. In addition, this scale can be used in quality improvement and care evaluation studies conducted in healthcare institutions. The results obtained from the scale can contribute to evaluating pediatric-friendly

care practices in pediatric emergency departments, monitoring care standards, and determining quality indicators for improvement. Thus, it may be possible to enhance the quality of nursing care, improve children's emergency department experiences, and strengthen the family-centered care approach.

### Conclusion

As a result of the analyses and evaluations conducted in this study, it was determined that the Pediatric-Friendly Care Assessment Scale in the Emergency Department is a valid and reliable measurement tool for the Turkish sample. The scale can be used to evaluate the perceptions of nurses working in pediatric emergency departments about child-friendly care practices and to guide development studies in this field. In addition, based on the data obtained from the scale, in-service training programs may be planned to improve nurses' awareness of pediatric-friendly care practices in pediatric emergency departments. Since the scale items were specifically developed to reflect the clinical characteristics, care processes, and environmental conditions of pediatric emergency departments, the use and interpretation of the scale should primarily be limited to this setting. Although child-friendly care principles are also important in other pediatric units, differences in clinical workflows, patient characteristics, and care priorities may influence the relevance of certain scale items in these settings. Therefore, conducting separate validity and reliability studies before applying the scale to nurses working in other pediatric units, such as pediatric intensive care, neonatal, pediatric surgical, or outpatient clinics, would be more appropriate.

### Acknowledgment of financial and other support

The authors received no financial support for the research and/or authorship of this article. The authors sincerely thank Yen-Ju Chen for her significant contributions, constructive feedback, and support during the conduct of this study.

### CRediT authorship contribution statement

**Dilek Demir Kösem:** Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Murat Bektaş:** Writing – review & editing, Writing – original draft, Validation, Supervision, Resources, Methodology, Formal analysis, Conceptualization. **Sibel Ergün:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Conceptualization. **Serap Kaynak:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Conceptualization.

### Funding

This research received no external funding.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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