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Turkish cross-cultural adaptation of Pediatric Transition Experience Measure

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ABSTRACT

Introduction and aim. The period immediately after leaving the hospital is known as the transition home, which presents a critical time for parents to take on all the responsibilities and care of a child without the support of the hospital environment. The purpose of this study is to culturally adapt the Pediatric Transition Experience Measure (P-TEM) instrument into Turkish and test its validity and reliability.

Material and methods. We conducted this methodological study with parents of children who were discharged from the hospital between May 2021 and May 2022. We evaluated linguistic, content, construct, convergent validity, and internal consistency.

Results. The P-TEM exhibited a two-factor structure and accounted for 65% of the overall variability. The internal consistency reliability for the transition preparation and transition support subdimensions was 0.779 and 0.793, respectively, while the total measure had a reliability of 0.831. The item-total correlations for the P-TEM ranged from 0.493 to 0.671. Parents who received the highest P-TEM scores experienced a 5.1-point improvement (95% confidence interval: 1.7 to 8.6) in their satisfaction with healthcare services, which was greater than that of parents who reported lower P-TEM scores.

Conclusion. It is worth noting that the P-TEM has been validated and has high reliability in Türkiye.

Keywords. measure, parents, pediatric transition, reliability, validity

Introduction

Hospital transition occurs within 30 days in 38% of cases.[1] Most children who die post-hospital discharge, pass away in their homes, indicating that interventions before discharge are optimal for dealing with this overlooked fatality cause.[2] Families report issues during their child's transition from the hospital to home, including insufficient preparation for home care, inadequate discharge instruction, and a lack of support systems following discharge or challenges in accessing healthcare providers.[3]

The period immediately after leaving the hospital is known as the transition home, which presents a crit-

ical time for parents to take on all the responsibilities and care of the child without the support of the hospital environment. The experiences or psychosocial problems experienced by parents who are followed up for chronic or acute health problems may differ. Parents spend a lot of time caring for their children and meeting their needs, which can be challenging. Dealing with chronic illness for a long period of time makes it easier to adjust to care. However, children and parents who are hospitalized and discharged for an acute reason may need support in transition to home care.[4] Adequate information about the transition home process is crucial in preventing adverse events related to the child, such as

home accidents, feeding difficulties, re-hospitalization, or even death.[2] Parents' experience of caring for their children after hospital discharge can be marked by anxiety in the initial days following the discharge. This anxiety often materializes as the feeling that they are not yet ready to move back home with their children. This signifies a lack of preparedness for discharge, indicating the importance of providing parents with training and preparation.[5]

In pediatrics, surveys completed by parents are frequently employed to evaluate patient and family experiences and gauge quality of care. These assessments are considered to be representative of the patient experience.[6] Parent-reported outcomes regarding the quality of the pediatric transition from hospital to home focus primarily on assessing particular aspects of the transition experience, such as the discharge process, preparedness for discharge, and coping with difficulties post-discharge, rather than the overall experience after discharge.[7] Patient or parent reported outcomes offer valuable insight into their perception of transitioning from hospital to home. It is important to maintain a logical flow throughout the paper by including causal relationships between statements. Use of objective language that is grammatically correct and avoids jargon, contractions, colloquial words or phrases, and ornamental language. The text should be free of errors in punctuation, spelling, and grammar. Lastly, avoid bias while maintaining a formal tone. These results can serve as useful metric.[8,9]

Aim

We examined the Turkish validity and reliability of the Pediatric Transition Experience Measure (P-TEM). The P-TEM was designed to evaluate parent-reported experiences of transitions from pediatric hospital care to home.

Material and methods

Design and participants

The research was carried out among parents whose child had been discharged from the Gynecology and Child Hospital in the Western Black Sea Region of Türkiye between May 2021 and May 2022. When it comes to improvement studies, the recommended sample size ranges from 5 to 10 times the total number of items.[10] As the P-TEM comprises eight items, the total number of parents was expected to be over 80. Due to the low response rate of screening questions in P-TEM, more parents were recruited. The study sample included a total of 127 parents, apart from those utilized in the pre-application, who met the study's inclusion criteria. These criteria were as follows: (1) Parents who speak Turkish (2) Patients who were discharged from a medical or surgical unit (3) Patients between the ages of 0 and 18 (4) Administered 2 to 8 weeks after hospital discharge.

Data collection

The purpose and scope of the study were explained to the parents during a telephone interview held after their child's discharge, and they were invited to participate. Data were collected by telephone because the follow-up was long and the parents did not come to the hospital at each follow-up. The data was collected using the Descriptive Information Form, P-TEM, and the PedsQL Health Care Parent Satisfaction Scale from a total of 127 children who met the sampling conditions, excluding those who underwent pre-application.

Descriptive Information Form

This form contains inquiries related to the age and gender of the patient, their length of stay in the hospital, the unit to which they were admitted, the frequency of their hospitalizations, as well as the gender, age, and education level of the parent.

Pediatric Transition Experience Measure

Desai et al. developed the Pediatric Transition Experience Measure (P-TEM) to assess parent-reported experiences of transitioning from hospital-to-home for their child.[9] P-TEM comprises eight items and includes two domains – transition preparation and transition support. Response options range from 0 to 10 on a Likert scale. Scores were computed as the mean of non-missing responses and converted on a linear scale of 0 to 100, where higher scores indicate higher quality.[8]

PedsQL Health Care Parent Satisfaction Scale (Version 3.0) (PedsQL)

It is a 25-question survey created by James W. Varni to assess contentment with healthcare provisions. Ulus and Kubilay subsequently localized it into Turkish.[11] The internal consistency coefficient of Cronbach's alpha reported by Ulus and Kubilay was α=0.93, whereas in the present study, it was found to be 0.89.[11] The internal consistency coefficient of Cronbach's alpha reported by Ulus and Kubilay was α=0.93, whereas in the present study, it was found to be 0.89.[11] Parents and patients were surveyed regarding their child's experience during the admission assessment and the seven days following discharge in the post-follow-up assessment.

Health Care Reuse

These measures encompassed healthcare reuse outcomes, defined as any unscheduled hospital revisit within 7 or 30 days. Data were collected from the hospital database.

Cross-cultural adaptation

We followed the guideline for cross-cultural adaptation of self-report measures which includes initial translation, synthesis of translations, back translation, pre-final version testing, and adaptation process.[12]

Translation

The initial adaptation phase entailed forward translation, with subsequent translation and back-translation to ensure content validity for P-TEM. During the first stage, two native Turkish translators independently translated the English version of P-TEM to generate a standardized version.[12] Each translator provided a written report of their completed translation. Subsequently, the two translators collaborated to synthesize the results of their translations. In the following stage, two translators, who were unaware of the original version, translated the scale items back into its original language. Back translations were executed by two English-speaking individuals without prior knowledge of the concepts discovered and preferably with no medical background. After approval was obtained, a draft scale was created.

Expert committee review (Content validity)

Nine experts in child health, nursing, diseases, and medical sciences were consulted for assessing the content validity of the P-TEM Turkish version.[12] The scale items were evaluated by experts using a four-point rating system. The content validity index (CVI) for P-TEM at the item level and the Lawshe content validity index for the scale level were utilized.

Pilot implementation

The pilot implementation marked the final stage of the adaptation process. The approach for a novel questionnaire aims to incorporate the pre-final version among children in the designated location.[12] To assess the comprehensibility of the Turkish form, we conducted a pilot study involving 30 parents whose children had been discharged from the hospital and agreed to participate. The pilot study was conducted with 30 people via telephone interviews to further test comprehensibility. Each parent completed a questionnaire and was subsequently interviewed to gain insight into their interpretation of the items and selected responses. No changes were made to the items after the pilot study. Data from the pilot study were not included in the sample.

Statistical analysis

Descriptive statistics, including frequencies, percentages, arithmetic means, and medians, were presented. Data analysis was conducted using the IBM SPSS Version 22.0 package program. Content validity was determined through analysis of CVI values, while Bartlett's Test of Sphericity and Keiser-Meyer-Olkin (KMO) tests were used to assess data adequacy and sample size for factor analysis. Principal component analysis was performed during the exploratory factor analysis (EFA) phase. The construct validity resulting from the EFA was verified via a CFA. Internal consistency was evaluated using McDonald's omega coefficient. To assess convergent validity, multivariable regression models were employed. Results were deemed statistically significant with a confidence interval of 95%, accepting $p < 0.05$ as significant.

Ethical considerations

The study received ethical approval from the university ethics committee (Protocol no: 2021-SBB-0212, Decision no: 6, Dated 04.30.2021) and necessary permissions from the institution where the study took place, as well as the relevant provincial health directorate. In order to use the scale in the study, Arti Desai, the scale's developer, granted permission via e-mail. Written consent was obtained from all parents included in the study.

Results

Most of the children in the study were female (53.6%) and fell within the age range of 0 to <2 years (37%). Additionally, the majority of children were hospitalized for less than 3 days (76.3%) in medical units (80.3%). A significant majority of patients (69.3%) have been hospitalized more than once. The majority of parents (66.1%) were female and had a primary school education (51.1%) (Table 1). Table 2 shows the average scores and response rates of the scales used in the study.

Table 1. Demographic characteristics of children

Demographic variables	n	%
Patient age		
0–2 years	47	37
2–4 years	37	29.2
5–12 years	14	11
13–18 years	29	22.8
Patient gender		
Girl	68	53.6
Boy	59	46.4
Length of stay in hospital		
<3 days	97	76.3
≥3 days	30	23.7
Hospitalized unit		
Medical	102	80.3
Surgical	25	19.7
Number of hospitalizations of child		
Once	39	30.7
More than once	88	69.3
Parent age		
18–34 years	37	29.1
35–44 years	51	40.1
≥45 years	39	30.8
Parent gender		
Female	84	66.1
Male	43	33.9
Parent education		
Primary school graduate	65	51.1
High school graduate	40	31.4
University graduate	22	17.5

Nine experts were consulted to assess the content validity of the P-TEM. CVRs and CVI were then computed to enable statistical interpretation of expert opinion data. The minimum CVR was set at 75% given that there were nine experts involved in the study.[13] The CVI was calculated as 78 based on the total average of all item CVRs. Considering the content validity index (CVI) formula of CVI=sum of content validity ratio (CVR) divided by the number of items, as well as the provided CVI being equal to CVR, it can be concluded that the scale has a statistically significant content validity (Table 2).

Table 2. Scale items and scores*

	Mean±SD	Minimum	Maximum	Responses in top box (%)[a]
P-TEM total score	89.40±14.1	20	100	28.7
Transition preparation	90.42±13.39	0	100	46.8
Transition support	85.02±13.25	0	100	59.4
PedsQL				
PedsQL admission assessment	68.44±22.58	10	100	-
PedsQL follow-up assessment	72.76±20.59	10	100	-
Health care reuse				
Any 7-d revisit hospital	4.7%	-	-	-
Any 30-d revisit hospital	7.5%	-	-	-

* - – not applicable, P-TEM – Pediatric Transition Experience Measure, PedsQL – PedsQL Health Care Parent Satisfaction Scale, [a] – for the P-TEM total score, transition preparation subdimension score, and transition support subdimension score, top-box responses referred to the proportion of respondents with a score of 100; for the individual measure items, top-box responses referred to the proportion of respondents who selected 10 on the Likert scale (which corresponded to "strongly agree")
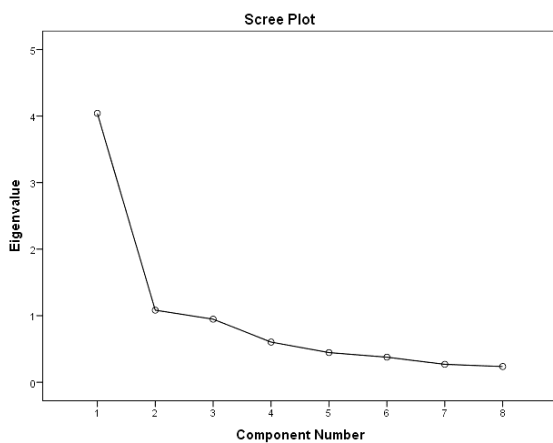

Fig. 1. Slope of scree plot

The KMO coefficient was determined to be 0.839, and the Barlett's Test of Sphericity yielded a value of 112.493 (p<0.001). According to the results of the EFA analysis, the P-TEM consists of two factors with an eigenvalue greater than 1 (Table 3, Figure 1). The eigen-

value of the first factor was 3.249, accounting for 40.611 % of the variance, while the second factor had an eigenvalue of 1.874 and accounted for 23.429% of the variance. The total variance accounted for by the two factors was 65.040% (Table 3).

Tablo 3. Exploratory factor analysis: pattern matrix

Items	Factors	
	Transition Preparation	Transition Support
Item 1	0.775	
Item 2	0.745	
Item 3	0.684	
Item 4	0.771	
Item 5		0.751
Item 6		0.857
Item 7		0.775
Item 8		0.612
Eigenvalue	3.249	1.874
Explained variance	40.611	23.429
Total variance explained	40.611	65.040

Figure 2 depicts the path diagram showcasing the standardized results garnered from CFA. All factor loadings recorded a p-value less than 0.001, indicating statistical significance. The goodness-of-fit indices for this investigation were as follows: Chi-square/sd=1.46, Root mean square error of approximation (RMSEA)=0.005, Standardized root mean square residual (SRMR)=0.025, Normed fit index (NFI)=0.91, Comparative fit index (CFI)=0.96, Adjusted goodness of fit index (AGFI)=0.96 and Goodness of fit index (GFI)=0.94.
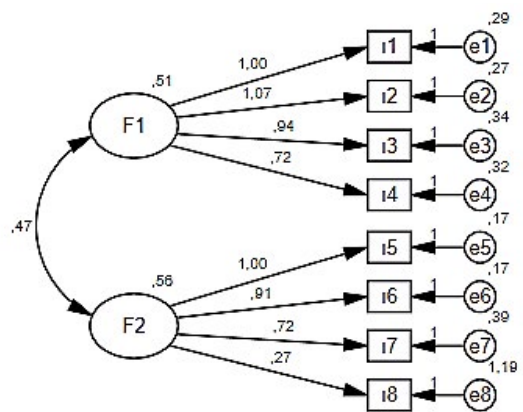

Fig. 2. Path diagram according to confirmatory factor analysis results

Participants who received the highest P-TEM scores (i.e., top-box responses) experienced an improvement of 5.1 points in healthcare parent satisfaction (95% confidence interval: 1.7 to 8.6). However, P-TEM scores did not show a significant association with 7 or 30 days of reuse, as indicated in Table 4.

Tablo 4. Difference in PedsQL and health care reuse outcomes for respondents with and without top-box responses on the P-TEM#

Predictor Variable	Change in PedsQL		Any 7-d revisit hospital		Any 30-d revisit hospital	
	n[a]	b (95% CI)[b]	n[a]	aOR (95% CI)[c]	n[a]	aOR (95% CI)[c]
P-TEM total score	127	5.1 (1.7 to 8.6)**	127	0.8 (0.3 to 1.9)	127	0.8 (0.4 to 2.1)
Transition preparation	127	4.6 (1.2 to 8.3)*	127	0.5 (0.2 to 1.8)	127	0.5 (0.3 to 2.0)
Transition support	96	4.9 (1.7 to 8.3)*	96	0.7 (0.3 to 2.6)	96	0.7 (0.4 to 1.9)

aOR – adjusted odds ratio, CI – confidence interval, P-TEM – Pediatric Transition Experience Measure, PedsQL – PedsQL Health Care Parent Satisfaction Scale, [a] – the denominators for these analysis are dependent on the number eligible for the P-TEM transition support subdimension or are due to missing data for the PedsQL measure or covariates, [b] – b coefficient represents the difference in PedsQL score, comparing respondents with to those without top-box responses on the P-TEM; models were adjusted for parent age, parent education, length of stay in hospital, and PedsQL admission score, [c] – adjusted odds ratio represents the odds of either a 7- or 30-d revisit hospital, comparing respondents with top-box responses on the P-TEM to those without top-box responses on the P-TEM; models were adjusted for parent age, parent education, length of stay, * – p<0.01, ** – p<0.001

The "transition preparation" subdimension had an internal consistency reliability of 0.779, while the "transition support" subdimension had a reliability of 0.793. The overall measure had a reliability of 0.831. P-TEM item-total score correlations ranged from 0.493 to 0.671, as shown in Table 5.

Table 5. Internal consistency results

Items	Factors	
	Transition Preparation	Transition Support
Item 1	0.591	
Item 2	0.623	
Item 3	0.671	
Item 4	0.560	
Item 5		0.566
Item 6		0.665
Item 7		0.556
Item 8		0.493
McDonald's coefficient omega (factors)	0.779	0.793
McDonald's coefficient omega (total)	0.831	

Discussion

We tested the validity and reliability of the P-TEM for Turkish parents reporting on their experience of hospital-to-home transitions for pediatric patients. The Turkish version of the P-TEM indicated a two-factor structure with high internal consistency. These findings support the high validity of the P-TEM instrument for use in Türkiye.

The P-TEM possesses a two-factor structure, which was assessed by CFA. The data's goodness-of-fit indices were satisfactory in this research.[14–17] Examining both EFA and CFA is crucial for testing construct validity in scale adaptation and development studies.[18] Model fit statistics for each iteration of the two-factor CFA are reported by Desai et al.[8]

Parents with higher P-TEM scores experienced a 5.1-point improvement (95% confidence interval: 1.7 to 8.6) in their satisfaction with health care as compared to parents with lower P-TEM scores. Desai et al.[8] used four parameters, including PedsQL and health care reuse. Unfortunately, there is no standardized scale available in Türkiye to measure parent-reported experiences during a pediatric hospital-to-home transition. Similarly to Desai et al., we employed the PedsQL and health care reuse measures to assess convergent validity.[8]

In this study, the item total score correlations for the P-TEM ranged from 0.530 to 0.825. Item-total score correlation provides information about whether the item accurately measures the quality measured by the remaining items in the scale. An item with a lower total score correlation value has a smaller share in the scale.[19] The item-total score correlation coefficient should be positive and greater than +0.20. Items that do not meet this criterion should be eliminated from the scale, and the reliability of the remaining items should be reassessed.[20]

McDonald's coefficient omega was utilized to assess the P-TEM's internal consistency. Internal consistency reliability was 0.779 for the "transition preparation" subdimension, 0.793 for the "transition support" subdimension, and 0.831 for the overall measure. These results indicate that the P-TEM is highly reliable.[21] Higher internal consistency indicates greater compatibility among scale items and a stronger collaboration between them in measuring a specific feature.[22] Desai et al. reported internal consistency reliability scores of 0.87 for the "transition preparation" subdimension, 0.67 for the "transition support" subdimension, and 0.84 for the overall measure, determined by McDonald's coefficient omega. These omega values were similar to those found in the study of P-TEM.[8]

Given the high frequency of pediatric hospital-to-home transitions, there is a substantial need for measurement tools such as P-TEM.[23,24] P-TEM has been validated for reliability in Turkish in this study and is expected to be widely used and useful in assessing the pediatric hospital-to-home transition experience. In this study, we adapted P-TEM to the Turkish language and evaluated its validity and reliability in children discharged from hospitals. Future research can test its fea-

sibility in routine clinical practice. Thus, healthcare providers can use P-TEM to assess the parental experience during hospital-to-home transitions. A study on the validity and reliability of P-TEM should be conducted to assess the experience of hospital-to-home transitions for pediatric patients with various conditions, such as chronic diseases. This will ensure the widespread use of P-TEM by testing its efficacy and reliability in diverse contexts.

Study limitations
A limitation of this study is that the data was collected during the COVID-19 pandemic. Collecting data in a single center during this period led to a prolonged data collection process. Another limitation is that the hospitalizations of the children included in the study for acute and chronic reasons were not separated. Whether the child has an acute or chronic illness may affect the transition to home. Therefore, it is recommended to conduct psychometric analyses on this factor in future studies.

Conclusion
The P-TEM developed by Desai et al. demonstrates high levels of validity and reliability in Türkiye. Thus, it is advisable to implement this scale to evaluate parent-reported experiences of pediatric hospital-to-home transitions in Turkish society. Furthermore, it is suggested to evaluate its validity and reliability in children with chronic diseases by using a larger sample.

Declarations

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Author contributions
Conceptualization, A.K., F.D. and E.G.Ş. and A.K., F.D. and E.G.Ş.; Methodology, A.K., F.D. and E.G.Ş.; Software, A.K., F.D. and E.G.Ş.; Validation, A.K., F.D. and E.G.Ş.; Formal Analysis, A.K., F.D. and E.G.Ş.; Investigation, A.K., F.D. and E.G.Ş.; Resources, A.K., F.D. and E.G.Ş.; Data Curation, A.K., F.D. and E.G.Ş.; Writing – Original Draft Preparation, A.K., F.D. and E.G.Ş.; Writing – Review & Editing, A.K., F.D. and E.G.Ş.; Visualization, A.K., F.D. and E.G.Ş.; Supervision, A.K., F.D. and E.G.Ş.; Project Administration, A.K., F.D. and E.G.Ş.; Funding Acquisition, A.K., F.D. and E.G.Ş.

Conflicts of interest
The authors have no *conflicts of interest* to declare.

Data availability
Data available on request from the authors.

Ethics approval
The study received ethical approval from the Bartın University Social Sciences and Humanities Ethics Committee (Protocol no: 2021-SBB-0212, Decision no: 6, Dated 04.30.2021)

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