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Research

Safe Pediatric Surgery: Turkish Adaptation of the Road to My Surgery Preoperative Checklist

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A B S T R A C T

Purpose: This study was conducted to evaluate the Turkish adaptation of the Road to My Surgery Preoperative Checklist.
Design: A methodological, correlational, and comparative study.
Methods: This study was conducted with 125 children between July 2022 and December 2023. Data were collected using an information form and the Road to My Surgery Preoperative Checklist. To evaluate the data, various analyses were performed, including content validity analysis, Kuder-Richardson 20 analysis, intraclass correlation analysis, upper and lower 27% group analysis, and item-total score correlation.
Findings: The Kuder-Richardson 20 reliability coefficient of the Road to My Surgery Preoperative Checklist was 0.715 and the intraclass correlation coefficient was 0.627. The item-total score correlation coefficients of the checklist items were between 0.099 and 0.836. A difference was found between the scale total mean scores of children in the upper 27% group and children in the lower 27% group ($P < .005$).
Conclusions: The Road to My Surgery Preoperative Checklist is a valid and reliable measurement tool for the Turkish sample.

Pediatric surgery, as a specialized field within surgical practice, addresses a wide range of patients from neonates to adolescents. The hospital environment, staff composition, materials used, and procedures tailored to each pediatric group collectively influence the unique dynamics of a child's hospitalization experience. These factors affect the child's ability to adapt, communicate with health care providers, and shape their perceptions of future medical encounters.[1] The effective preoperative preparation of pediatric patients plays a critical role in promoting a positive hospital experience, reducing procedural complications, and optimizing surgical outcomes. Achieving these objectives requires careful adherence to safe surgical protocols and the systematic implementation of preoperative checklists.[1]

In 2007, the World Health Organization launched its efforts to advance safe surgical practices as part of its second global initiative for patient safety, titled *Safe Surgery Saves Lives*.[2] According to the National Patient Safety Foundation, patient safety involves the systematic processes implemented within health care institutions to prevent, mitigate, and address injuries and adverse events that may occur during the delivery of care.[3] Surgical safety, as a critical aspect of patient safety, represents a widespread global challenge. A significant proportion of adverse events in hospital settings are associated with surgical procedures, with preventable errors accounting for at least half of the reported cases.[4] Efforts to improve the quality of surgical care and reduce mortality rates and associated complications have emphasized the importance of surgical safety through educational initiatives and the development of a comprehensive safe surgery checklist.[2] A study demonstrated a significant 9.7% reduction in complications among pediatric patients who underwent surgery with the implementation of a safe surgery checklist, compared to those who did not receive such checklist interventions.[5]

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In Turkey, the Ministry of Health has adopted and implemented the World Health Organization's *Safe Surgery Checklist* for adult patients. However, research on its application in pediatric surgery remains limited.[5] This study aims to contribute to the existing literature by providing insights into pediatric surgery checklist protocols. Accordingly, the present investigation was conducted to evaluate the Turkish adaptation of the *Road to My Surgery* Preoperative Checklist, originally developed by Pires et al[6] in 2013.

Methods

Research Design

A methodological, correlational, and comparative design was used to evaluate the Turkish adaptation of the Road to My Surgery Preoperative Checklist.

Sample

The study was conducted between July 2022 and December 2023 with children admitted for surgical intervention to the pediatric clinic of a training and research hospital in the western region of Turkey.[7,8] In the center where the research was conducted, minor surgical procedures such as circumcision, appendectomy, tonsillectomy, and adenotonsillectomy were primarily performed. For the adaptation study of the *Road to My Surgery* Preoperative Checklist, which comprises 11 items, a sample size of 110 children was established, based on a criterion of 10 individuals per checklist item. Participants were subsequently selected through a simple random sampling method from among hospitalized children aged 6 to 16 who were undergoing surgical procedures, exhibited normal development, and volunteered for inclusion. A total of 135 children, whose parents and children provided consent, were included in the study. Additionally, a preapplication phase involving 10 children was conducted, leading to their exclusion from subsequent analysis and resulting in a final sample size of 125 children for the study. Data collection employed both an Information Form and the *Road to My Surgery* Preoperative Checklist.

The Information Form included four questions regarding the child's age, gender, diagnosis, and the nature of the surgical procedure performed. The *Road to My Surgery* Preoperative Checklist, developed by Pires et al,[6,9] comprises 12 items addressing interventions to be performed on children during the preoperative period, using child-friendly language and an engaging format. It includes an area for the child to mark with an "X" or color in. The checklist was designed as a pathway representing the child's journey from hospitalization to transfer to the operating room, emphasizing the preoperative experience. In the original study, 11 of the 12 items were included in the analysis, as the final item ("See you! I'm going to surgery in a few minutes!") pertains to the completion of the checklist rather than actions aimed at enhancing child safety in the preoperative period (Figure 1).

Ethics

Institutional approval was granted by the hospital where the research was conducted. Ethical approval was secured from the Non-Interventional Research Ethics Committee of a university, issued on June 29, 2022, under decision number 4/1. The objectives of the study were clearly explained to both the children and their parents, and written and verbal consent was obtained from all participants who volunteered to take part in the study.

Procedure

Language Validity of the Scale Step

In the process of scale adaptation, it is essential to employ appropriate sentence structures and idiomatic expressions in the target language, as well as to modify elements that are culturally unfamiliar. To facilitate this, written permission was obtained via email from Maria Paula de Oliveira Pires, a member of the research team, for the adaptation and utilization of the scale in Turkish. The scale was translated into Turkish by two separate linguists. Following the initial translation, the Turkish version was refined through collaborative efforts among the researchers and subsequently reviewed by two Turkish language experts. Finally, the Turkish scale was back-translated into Portuguese by two different linguistic experts.

Expert Opinion Steps

It is recommended to consult at least three expert opinions to determine the content validity of the scales.[10] For the scales translated into Turkish, feedback was sought from five experts in the field of child health and disease nursing, as well as three experts in surgical disease nursing. The evaluators were selected based on their extensive experience, having worked in their respective fields for a minimum of 10 years, and having conducted research on pediatric surgery. The consistency of the expert opinions was subsequently evaluated.

Pretest Step

The scale was administered to 10 children with characteristics similar to those of the sample, and these children were not included in the final sample.

Validity and Reliability Calculation Steps

To establish the scale, data from the draft scale were analyzed by three researchers on the research team who possess expertise in statistical methods.

Statistical Analysis

Data analysis was conducted using IBM SPSS Statistics 21.0. Descriptive statistics were calculated in terms of percentages and mean scores. An error margin of 0.05 was established for the data analysis.

Validity

The content validity of the scale was assessed by experts, employing the Scale-Level Content Validity Index (S-CVI) to evaluate their opinions. Regression analysis was conducted to determine the criterion or predictive validity.

Reliability

The internal consistency of the scale was evaluated using the intraclass correlation coefficient (ICC) and the Kuder-Richardson Formula 20 (KR-20). The 27% upper-lower group method was used to assess the reliability between the lower and upper groups.

Results

The mean age of the children who participated was 7.37 ± 1.57 years and 89.6% of them were male. Descriptive characteristics of the children and descriptive characteristics of the scale items are presented in Table 1.

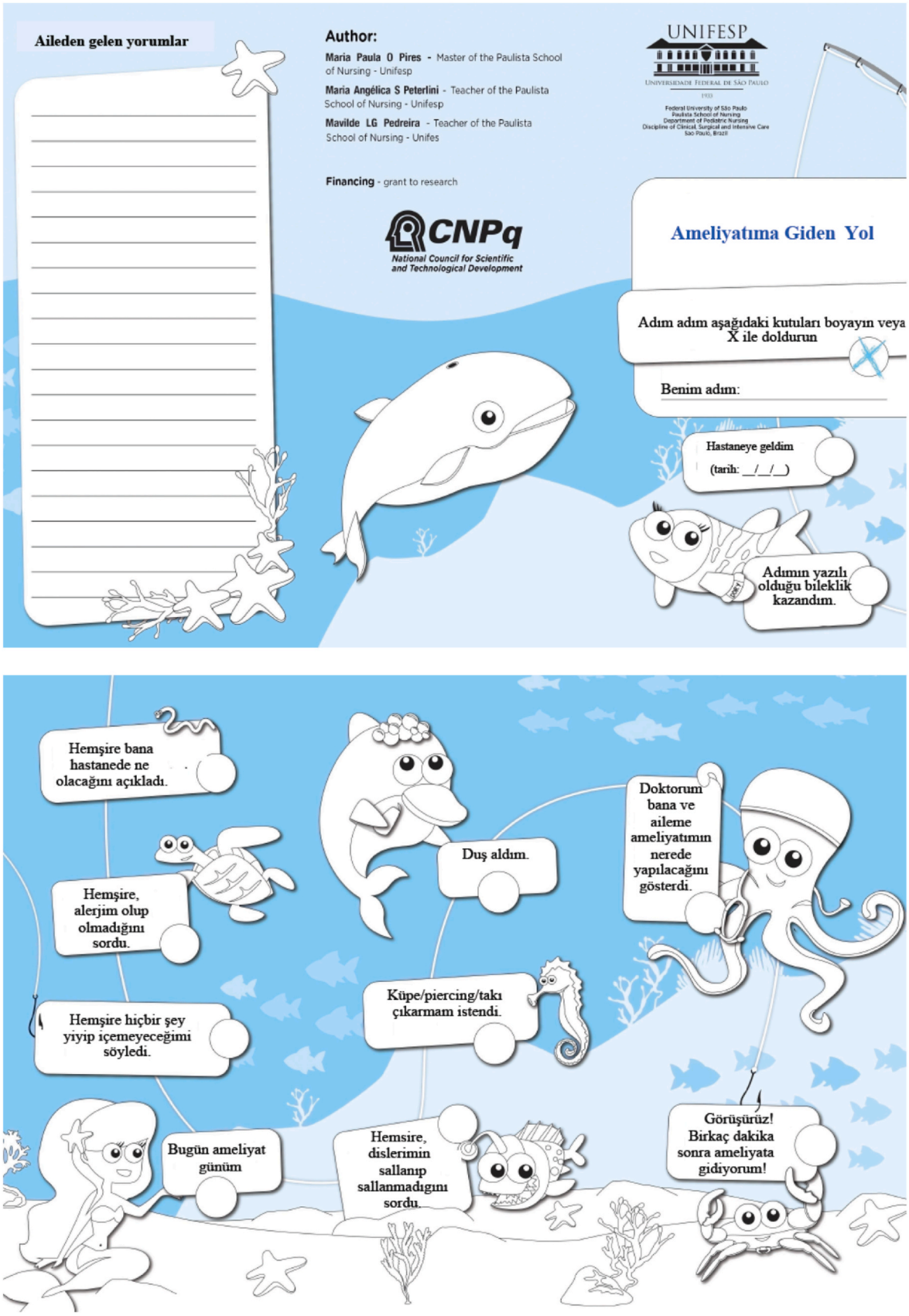

Figure 1. The Road to My Surgery Pediatric Surgical Safety Checklist Turkish version. For the adaptation of the scale to Turkish, permission was received from Mavilde L. G. Pedreira via e-mail and with a signature. CNPq, National Council for Scientific and Technological Development; UNIFESP, Federal University of São Paulo.
This figure is available in color online at www.jopan.org.

Table 1
Descriptive Characteristics of Participants and Scale Items

Descriptive characteristics of participants		*M* ± *SD*	*Min-max*
Age		7.37 ± 1.57	6-12
		n	%
Gender	Girl	13	10.4
	Boy	112	89.6
Type of surgery	Circumcision	105	84.0
	Tonsillectomy	6	4.8
	Adenotonsillectomy	14	11.2
Descriptive characteristics of scale items			
Comments from family	Comment	-	-
	No comment	125	100
My name is	Response	125	100
	No response	-	-
I got to the hospital	Response	125	100
(date: __/__/__)	No response	-	-
I won a bracelet with	Response	125	100
my name	No response	-	-
The nurse explained to me	Response	114	91.2
what will happen to me	No response	11	8.8
here at the hospital			
The nurse asked me whether	Response	123	98.4
or not I have allergies	No response	2	1.6
The nurse told me that I	Response	101	80.8
cannot eat or drink	No response	24	19.2
anything			
Today is the day of my	Response	124	99.2
surgery	No response	1	0.8
The nurse asked me whether	Response	50	40.0
or not I have loose teeth	No response	75	60.0
I was asked to take earrings/	Response	74	59.2
piercing/jewelry	No response	51	40.8
I showered	Response	103	82.4
	No response	22	17.6
My doctor showed to me and	Response	103	82.4
to my family where my	No response	22	17.6
surgery will be done			
Bye! I'm going for surgery in	Response	125	100
a few minutes!	No response	-	-

M, mean; SD, standard deviation; Min, minimum; Max, maximum.

Validity Analysis

Content Validity

To assess content validity, the Content Validity Index (CVI) was calculated. Both the translated version and the original version of the checklist were presented to 5 experts in pediatric nursing and 3 experts in surgical nursing, who rated the checklist on a scale of 1 to 4 (1 = not appropriate, 2 = needs significant correction, 3 = needs minor correction, 4 = very appropriate). Agreement among the experts was evaluated using the CVI, which ranged from 0.88 to 0.99 for individual items (I-CVI) and was 0.96 for the overall scale (S-CVI).

Predictive Validity

In the linear regression analysis, a model was developed to examine the relationship between the variables. In this model, the age and gender of the child accounted for 17.1% of the variance in the checklist scores (Table 2). As the age of the children increased, the checklist score rose by 0.398 (β = 0.398). Individual analysis of the variables revealed that age had a significant effect on the checklist score ($P < .05$), while gender did not have a significant effect ($P > .05$).

Reliability Analysis

To assess the reliability of the "Road to My Surgery Preoperative Checklist," its internal consistency was examined using the KR-20 reliability coefficient. The KR-20 reliability coefficient for the checklist was calculated to be 0.715, with a 95% confidence interval ranging from 0.506 to 0.724. The item-total score correlation coefficients for the checklist items ranged from 0.099 to 0.836 (Table 3). Additionally, the ICC was used to evaluate the internal consistency of the checklist, yielding an ICC of 0.627 ($P < .001$).

Lower-upper Group Reliability

A difference was observed between the mean total scores of children in the upper 27% group and those in the lower 27% group ($P < .05$). These findings indicated that the scale demonstrates good discriminative power, effectively measures the intended construct, and can distinguish between the upper and lower 27% groups (Table 4).

Discussion

Children are particularly vulnerable to the stress of surgery due to their limited cognitive development, heightened dependence on caregivers, lack of autonomy, limited life experience, and incomplete understanding of the health care system.[11] The surgical process in children typically involves challenging and distressing experiences for both the child and their family. During the procedure, the child may experience significant anxiety and stress.[12,13] One study reported that implementing a safe surgery checklist before pediatric surgical interventions reduced the incidence of complications.[5]

The literature indicates that preoperative safe surgery checklists designed for adults are also applied to pediatric patients, though these checklists are typically implemented by health care professionals.[14] However, in pediatric patients undergoing surgical interventions, factors such as physical characteristics, developmental stages, and legal status, which differ from those of adults, significantly influence patient safety practices. Therefore, it is essential to develop and implement tailored solutions to ensure patient safety

Table 2
The Extent to Which Children The Road to My Surgery Preoperative Checklist and the Variables

	The Road to My Surgery Preoperative Checklist						
	Model 1						
	Unstandardized Beta	Standard Error	Standardized Beta β	*t*	*P*	95% CI	
						Lower	Upper
Age	0.434	0.103	0.398	4.221	.000	0.230	0.637
Gender	0.172	0.530	0.031	0.324	.746	−0.877	1.220
R	0.414						
R^2	0.171						
F	12.583						
P	.000						
DW (1.5-2.5)	2.212						

CI, confidence interval; R, correlation; R^2, correlation coefficient (explained variance ratio); F, model statistics; *P*, level of significance; DW, Durbin Watson.

Table 3
Correlations of the Item-total Score

Items		Item-total Score Correlation*
1	My name is	-
2	I got to the hospital (date: __/__/__)	-
3	I won a bracelet with my name	-
4	The nurse explained to me what will happen to me here at the hospital	0.604
5	The nurse asked me whether or not I have allergies	0.099
6	The nurse told me that I cannot eat or drink anything	0.758
7	Today is the day of my surgery	0.227
8	The nurse asked me whether or not I have loose teeth	0.754
9	I was asked to take earrings/piercing/jewelry	0.836
10	I showered	0.666
11	My doctor showed to me and to my family where my surgery will be done	0.470
12	Bye! I'm going for surgery in a few minutes!	-

* $P < .001$.

Table 4
Item Analysis Results of the Road to My Surgery Preoperative Checklist

	Lower 27% (n = 34)		Upper 27% (n = 34)		*t*	*P*
	Mean	SD	Mean	SD		
Scale	11.00	0.00	7.02	0.96	23.899	0.000

SD, standard deviation.

in this population.[14] The literature indicates that a form developed separately for boys and girls by the American Society of Anesthesiologists allows children to be evaluated and informed about anesthesia using a picture-based technique. This form provides information about the anesthesia that will be administered during surgery in a child-friendly manner.[15] However, this form does not serve as a substitute for a preoperative checklist, as it solely provides information about anesthesia. The preoperative checklist developed by Pires et al[6] in Portuguese was based on the child's self-report and used a picture-based technique. Child-centered Care is a philosophy of care that prioritizes children and adolescents, placing their needs and interests at the core of health care thinking and practices.[16-18] The checklist developed by Pires et al[6] is significant because it places the child at the center of care, thereby enhancing their sense of value. In this study, a Turkish adaptation of the aforementioned checklist was conducted. However, as Pires et al[6] did not report findings on the validity and reliability of their checklist, a comparison of research results could not be made.

Expert opinion was used to assess content validity in the Turkish adaptation of the checklist. I-CVI values above 0.78 and S-CVI values above 0.80 are recommended.[19] In this context, the content validity results of the checklist align with the literature, indicating that it comprehensively addresses all necessary stages of preoperative preparation.

Linear regression analysis was employed to determine the predictive influence of age and gender on the checklist scores. The analysis revealed that as children's age increases, their checklist scores also increase, indicating a significant effect of age on checklist outcomes. This result can be attributed to the corresponding increase in children's cognitive development with age. It suggests that the checklist demonstrates predictive validity in relation to the age variable.

Item-total correlations were calculated to assess the extent to which each item in the checklist measured the intended construct. The results indicated that each item's correlation with the total score was positive and significant, suggesting that all items on the scale effectively contribute to measuring the construct intended by the checklist as a whole.[20]

Item analysis is crucial in scale development and adaptation studies, and it is recommended to assess item discrimination.[20] Consequently, this study evaluated the discriminative properties of the checklist items. Using the *t* test for independent samples, the analysis demonstrated that both each individual item and the overall checklist exhibited significant discriminative properties.[21]

The KR-20 statistic was used in the reliability analysis of the checklist, which is applicable only for items measured on a dichotomous scale. According to the literature, a KR-20 value greater than 0.70 is recommended.[22,23] The results of this study indicated that the checklist met this criterion, demonstrating its reliability. Additionally, the ICC was calculated to assess the internal consistency of the checklist. The analysis revealed moderate reliability for the checklist.[24] Furthermore, the reliability results indicated that the items in the scale were not only related to preoperative preparation but also consistently measured the same construct.

Limitations

This study has several limitations. First, it was conducted at a single institution, which restricts the generalizability of the findings. Second, the interventions were exclusively applied to children undergoing same-day surgical procedures, such as circumcision, which may limit the applicability of the results to this specific population. Last, the study focused on children aged 6 to 16 years; therefore, the findings cannot be generalized to children aged 0 to 5 years or 17 and 18 years.

Conclusions

The Road to My Surgery Preoperative Checklist is a valid and reliable measurement tool for children aged 6 to 16 years within the Turkish population. This study represents the first introduction of a preoperative checklist based on child self-reporting to the literature in Turkey. It is recommended that this checklist be adapted into different languages. The implementation of this checklist in pediatric surgery clinics is expected to enhance the philosophy of child- and family-centered care. Incorporating this checklist into the routines of pediatric surgical nurses may help reduce children's anxiety regarding surgery and facilitate their adaptation process. Future studies should be conducted to evaluate the outcomes of using this checklist from the perspectives of children, families, and health care professionals.

CRediT Authorship Contribution Statement

Aslı Akdeniz Kudubes: Data curation, Formal analysis, Methodology, Project administration, Writing—original draft, Writing—review and editing. Hamide Zengin: Conceptualization, Methodology, Writing—original draft. Özge Öztürk: Data curation. Murat Bektaş: Formal analysis, Methodology, Supervision.

Declaration of Competing Interest

The authors have no funding or conflicts of interest to disclose.

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