European Journal of Oncology Nursing 34 (2018) 28–34

Contents lists available at ScienceDirect

European Journal of Oncology Nursing

journal homepage: www.elsevier.com/locate/ejon

Cultural adaptation of the Adolescent Pediatric Pain Tool in Turkish children with cancer

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ARTICLE INFO

Keywords:
Adolescent pediatric pain tool
Cancer
Cultural adaptation

ABSTRACT

Purpose: Pain is very common among pediatric cancers. This study aimed to assess the reliability and validity of the Turkish version of the Adolescent Pediatric Pain Tool (APPT).

Methods: In this methodological study, language validity and content validity of the words in the third section of the scale, which was administered to children with cancer, were tested using the Q-sort method. The APPT was used to measure test-retest reliability once for each of the 1st, 2nd and 3rd weeks of the chemotherapy protocols for 30 children. A reliability test was conducted using the APPT for 96 children with cancer.

Results: The number of words included in the third section of the APPT was reduced to 56 following the completion of the language and content validity using the Q-sort method. In the test-retest method, results from the three measures taken showed that the intra-class correlation coefficient was good. The internal consistency of the scale was also good ($\alpha = .78$) in terms of the total number of body areas marked on body outline diagram, pain severity, pain intensity ratings, total number of word descriptors, and total number of sensory, affective, evaluative and temporal word descriptors. Correlations were found between the total number of body areas marked on the body outline diagram and the total number of word descriptors ($r = .53$), the pain severity and pain intensity ratings ($r = .95$), and the total number of word descriptors ($r = .38$).

Conclusions: The Turkish version of the APPT was determined to be valid, reliable and easy to use for pediatric cancer patients.

1. Introduction

Pain is a very common experience among pediatric populations and functions as one of the most prevalent factors that impair quality of life. Children and adolescents who experience pain may have their daily life activities seriously compromised, and most of them tend to face a number of problems, including but not limited to sleep difficulties, eating disorders, and decreases in school success (McKillop and Banez, 2016). Clinical decisions to treat pain, as well as clinical trials for pain interventions, rely on the accurate assessment of pain. Given the multidimensional nature of pain, a comprehensive assessment should include not only the intensity, but also the location and the quality of pain as outcome measures in clinical trials (McGrath et al., 2008; Pope et al., 2017).

Savedra et al. (1993) are credited with establishing the validity and reliability of the Adolescent Pediatric Pain Tool (APPT), which is identified as being a multidimensional self-report tool that evaluates the intensity and influence of the pain experience (Fernandes et al., 2014). Versions of the APPT have been developed in English, Spanish and Portuguese for use in studies that serve to provide a deeper understanding of the pain experience and to examine the effectiveness of pain management interventions. APPT is used in practice or research to characterize multiple dimensions of pain and to compare different painful conditions (Fernandes et al., 2015; Jacob et al., 2003, 2008). The APPT has been particularly most commonly used to assess the cancer pain (Bossert et al., 1996; Jacob et al., 2007; Van Cleve et al., 2004).

The incidence of childhood cancer has been steadily increasing over the last few decades ("Childhood Cancer Statistics," 2017). A high degree of symptom-related suffering is experienced by children early in cancer therapy, especially symptoms of pain (30.2%) (Levine et al., 2017). Children with cancer who undergo active treatment and post-

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https://doi.org/10.1016/j.ejon.2018.02.008
Received 12 September 2017; Received in revised form 31 January 2018; Accepted 26 February 2018

treatment have been shown to experience clinically significant levels of pain, and they are also exposed to many painful procedures (Tutelman et al., 2017). However, most pain assessment scales are observational and tend not to define quality and location of the pain. In a systematic review, it was found that pediatric observational scales exhibited low quality of evidence and could not clearly define the pain characteristics (Andersen et al., 2017). This is an important finding insofar as that when the pain is not sufficiently defined, it is not possible to have an effective pain management. The APPT addresses this shortcoming in pain assessment, as it is a multidimensional tool that can be used for a wide range of ages and that is designed to assess pain location through a BOD (body outline diagram) or a word graphic rating scale, even in children who lack verbal and cognitive abilities. This study aims to introduce the APPT in Turkish and thereby contribute to the global literature. With this purpose in mind, the study was carried out to test the reliability and validity of the APPT in pediatric cancer patients in Turkey.

2. Methods

2.1. Participants and settings

The sample universe consisted of children and adolescents who were being treated at the Pediatric Oncology and Hematology Divisions of a university hospital located in Izmir and who had undergone chemotherapy between March-August 2017. Children and adolescents were eligible to participate if: 1) they and their parents volunteered to participate; 2) they were 7–18 years of age; 3) they stated that they experienced pain during chemotherapy; and 4) they were able to speak, read, write, and understand Turkish. As the APPT does not include any items, and is made up of three sections, 30 children participated in the research for the test-retest reliability and 96 children participated for reliability analyses.

2.2. Data collection

After permission was granted from the author who developed the APPT, the translation-back translation method was used for language validity. A target language version is translated back into the source language version in order to verify translation of the tool in the back-translation method. The back-translation method requires the use of at least 2 translators working independently (Maneesriwongul and Dixon, 2004). The content validity was performed following the final version of the APPT. Researchers organized face-to-face interviews with the children who complied with the research acceptance criteria to inform them on the research objectives. A pilot study was performed with 10 children diagnosed with pediatric cancer, and using the Q-sort method, the words included in the third section of the scale were evaluated. Q-sort method is used to investigate the perspectives of participants who have different positions on an issue by having them rank and sort a series of statements (Fifolt et al., 2017). After the final version of the scale was obtained, the APPT was applied to 30 children once a week, three times in total, and test-retest reliability was conducted. For the reliability study, the APPT was applied to 96 children. Demographic data were recorded by the researchers.

2.3. Instrument

Adolescent Pediatric Pain Tool: The Adolescent Pediatric Pain Tool (APPT), originally developed by Savedra et al. (1993) as a multidimensional (location, intensity, quality, and temporal pattern of pain) measurement instrument for self-report of pain by English speaking children and adolescents between the ages of 8 and 17. It was modeled after the McGill Pain Questionnaire in adults (Melzack, 1975). The APPT is an especially unique tool for its ability to measure pain quality (nature of the pain) and the temporal pattern of pain (how pain changes over time). The sensory, affective, and evaluative dimensions of pain have been obtained by a series of descriptive studies conducted with 1223 multi-ethnic, English speaking children and adolescents (Wilkie et al., 1990). A new term to define pain duration was added in subsequent studies, resulting in the development of a list of 67 pain quality descriptors to assess four dimensions of pain (Savedra et al., 1995).

2.4. Statistical analysis

Descriptive statistics of the children who participated in the test-retest reliability part of the study were evaluated in terms of numbers, percentages and means. Three measures taken of the total number of body areas marked on the BOD, pain severity, pain intensity ratings and total number of word descriptors were compared via the non-parametric Friedman test and intra-class correlation coefficient. Numbers, percentages and means were used to evaluate the descriptive statistics of the children who participated into the validity part of the study. Pearson's correlation coefficient was calculated to assess the relationship between the total number of body areas marked on BOD, pain severity, total number of sensory, affective, evaluative, and temporal word descriptors and total number of word descriptors. To assess reliability, Cronbach's alpha was used. Data were analyzed with SPSS 19 software.

2.5. Ethics

Ethical approval (2016-77) was acquired for the research by the Ege University School of Nursing Ethical Committee, and permission to conduct the study was granted from the university where the research was conducted. Both the children and their parents gave their consent to participate in the study.

3. Results

3.1. Validation of Turkish version

Language Validity: Certain words can have different meanings in different cultures and can be synonymous with different words in spoken language. Colloquialisms too can often differ from culture to culture. These variations are common to all languages. However, because of these variations, careful translation of an instrument into another language is necessary (Van Cleve et al., 2001). The APPT word list was translated literally, remaining loyal to the original English language, to allow for the assessment of discrepancies, such as the use of regional idioms or concepts that are difficult to translate. Our early attempts to develop a Turkish word list based on the APPT involved us working with five language experts who were fluent in both English and Turkish. These experts conducted five different translations, which were assessed by the researchers to produce a consensus version. We conducted a more formal process to develop a standard Turkish translation of the words from the APPT, using back-translation. As the Turkish equivalents of the words, ‘hitting-pounding’, ‘terrible-awful’, ‘pin like-like a pin’, and ‘dying-killing’ are similar, four words were excluded (hitting, terrible, pin like, killing), and thereby the number of words was reduced to 63 words.

Content Validity: The content validity was done to assess whether the items within the scale represent the measurement area. It is quantified by content validity index (CVI) and determined using a rating system (1 = not relevant, 2 = sometimes relevant, 3 = quite relevant, 4 = highly relevant). The higher score indicates further agreement of members of panel on the necessity of an item in an instrument (Zamanzadeh et al., 2015). The numeric value of CVI is determined by Lawshe Method. In this method, at least 5 and at most 40 expert opinions are needed (Gilbert and Prion, 2016). In our study that is number of 10 pediatric pain experts, if CVI is bigger than 0.62 according to

Lawshe Table, the item in the instrument with an acceptable level of significance will be accepted. The CVI indicated that the Turkish version of the APPT had the highest ranks among the experts (0.8–1.0).

3.2. Pilot study

Once the expert opinions were evaluated and the final version of the APPT, which included 63 words, was determined, the Q-sort method was applied on 10 children and adolescents who were between the ages of 7 and 18 and had cancer. As part of the Q-sort method, each word was hand printed on an index card, and the participants were asked to recall their pain experiences and put the descriptors into one of the three following categories:

(1) I use this word to describe hurt/pain,
(2) I don't use this word to describe pain/hurt, or
(3) I don't know this word (Fifolt et al., 2017).

After the data collection was completed, the obtained data were listed by the researchers. The accepted standard for retention of a word on the list was that 6 or more children identify the word as 'I use this word to describe hurt/pain'. If a word was identified by less than 6 children, it was eliminated. The results found that 56 (89%) out of the possible 63 words were categorized by at least 6 children as "I use this word to describe hurt/pain", so these words were retained. The words "deadly, sneaks up, beating, pinching, like a scratch, splitting, comes and goes" were categorized as the words that children 'did not know or use to define hurt/pain', therefore these words were removed from the word list. As a result of the pilot study, it was determined that the APPT's final version include 56 words.

3.3. Test-retest reliability

The APPT does not include any item which has all three of the dimensions of severity, location and quality of pain, therefore, a test-retest reliability was conducted with 30 hospitalized children in total –equal to 10 times the three dimensions. The APPT was conducted in three different phases with children/adolescents who were hospitalized for chemotherapy treatment. The three phases executed to collect the data were determined as the 1st, 2nd and 3rd weeks of the chemotherapy protocol. The recommended protocol is 21- to 28-day cycles in general, therefore it was decided that three different time slots be used to conduct at least one evaluation per week. These periods were established on the basis of terms when pain interventions were typically made, such as port needle change or lumbar puncture, and it was just after these interventions that the APPT was filled out by the children/adolescents.

The APPT was applied to 30 children once a week. The mean age of the children was 11.6 ± 3.1 (min:8, max:17), 56.7% were male, and 40% were diagnosed with ALL (n = 12), 16.7% with Ewing's sarcoma (n = 5), 10% with AML (n = 3), 10% with osteosarcoma (n = 3), 10% with lymphoma (n = 3), and 13.4% with neuroblastoma (n = 4). On the front side of the BOD, a majority of the children stated in the 1st, 2nd and 3rd measures that they experienced pain in the lower extremities of the body, the chest and the head-neck area. On the back side of the BOD, a majority of them stated that they had pain in the back and the lower extremity areas. The total number of body areas marked on the BOD ranged from 4 to 5. In terms of pain severity, 40%, 43.3% and 36.7% of the children stated that they experienced moderate pain in the 1st, 2nd, and 3rd measures, respectively. In the examination of pain quality, children selected 13 words in the 1st and 2nd measures to describe their pain, and they selected 12 words in the 3rd measure. The selected words were largely related to the sensory area (Table 1). The intra-class correlation coefficient (ICC) was .84 for the total number of body areas marked on the BOD, .73 for the pain severity, .72 for the pain intensity ratings and .82 for the total number of word descriptors. According to the ICC estimate, values less than 0.5, between 0.5 and 0.75, between 0.75 and 0.9, and greater than 0.90 are indicative of poor, moderate, good, and excellent reliability, respectively (Koo and Li, 2016). There was no difference between the total number of body areas marked on the BOD, pain severity, pain intensity ratings and total number of word descriptors at repeated pain measurements ($p > .05$) (Table 1).

3.4. Reliability

In this stage, it was planned that the number of children with cancer in the sample be equal to the number of words that define the quality of the pain included in the APPT. To increase the reliability, the types of pain experienced by 96 children who were between the ages of 8 and 17 and diagnosed with cancer were examined. The APPT was administered to the children/adolescents who participated in this study, and they were asked to identify the location and assess the severity of the pain and to mark all the words defining their current pain. The children/adolescents were interviewed alone either in their hospital rooms or in the visiting room of the out-patient chemotherapy unit, if they were receiving out-patient treatment. Patient characteristics were given at Table 2.

All patients were asked to mark pain locations on the BOD, and the most frequently marked areas were the chest (37.5%), lower extremities (36.5%), head and neck (35.4%), and back (27.1%), while 53.1% of them did not make any marks on the BOD. The total number of body areas marked on the BOD was 1.8 ± 1.0. In examining the severity of pain, 39.6% of the patients reported that they experienced a moderate level of pain. The APPT features a 10-cm numerical pain rating scale to measure pain intensity, with the responses including 'no pain', 'little pain', 'medium pain' and 'worst possible pain'. The mean pain intensity rating was 5.2 ± 2.1 on this scale. Patients choose word descriptors to describe the quality of pain, and it was determined that the mean total number of word descriptors was 13.0 ± 5.7. "Uncomfortable, aching, sometimes, crying, off and on, like a pin, and tight" were the most frequently selected descriptors, being specified by more than 40% of the patients (Table 3).

The correlation between the total number of body areas marked on the BOD, pain severity, total number of sensory, affective, evaluative, and temporal word descriptors and total number of word descriptors was examined. There was no significant difference found between the total number of body areas marked on the BOD and pain severity, pain intensity ratings and total number of affective word descriptors, but a positive, significant relationship was found between total number of sensory, evaluative, and temporal word descriptors and total number of word descriptors ($p < .001$). No difference was found between pain severity and total number of temporal word descriptors, while there was a positive, significant relationship between total number of sensory, affective, and evaluative word descriptors and total number of word descriptors ($p < .001$). Similarly, there was no difference found between pain intensity ratings and total number of temporal word descriptors, but a positive, significant relationship was found between total number of sensory, affective, and evaluative word descriptors and total number of word descriptors ($p < .001$). A positive, significant difference was found between total number of word descriptors and total number of sensory, affective, evaluative, and temporal word descriptors ($p < .001$) (Table 4).

4. Discussion

The purpose of the translation was to ensure that the scale remained as loyal to the original English language as possible. However, when the back-translation method is applied in a very strict way, the cultural features need to be ignored, as they can reduce the scale's applicability, and replaced with culture-specific statements to ensure the quality of assessment (van Widenfelt et al., 2005). In this regard, words which had

Table 1
Pain location, severity and quality at weeks 1, 2, 3 of cancer treatments (n = 30).

Pain Location[a]	Week 1		Week 2		Week 3	
	n	%	*n*	%	*n*	%
Front						
Upper extremities	7	23.3	4	13.3	5	16.7
Lower extremities	12	40.0	10	33.3	11	36.7
Head and neck	11	36.7	10	33.3	10	33.3
Abdomen	4	13.3	6	20.0	3	10.0
Chest	12	40.0	11	36.7	10	33.3
Back						
Lower extremities	8	26.7	4	13.3	6	20.0
Shoulder	6	20.0	8	26.7	10	33.3
Head	1	3.3	2	6.7	1	3.3
	M* ± *SD	***Min-Max***	***M* ± *SD***	***Min-Max***	***M* ± *SD***	***Min-Max***
The total number of body area marked on BOD	5.2 ± 2.2 $X^2 = 1.378$ p = .502	2.5–10	5.3 ± 2.0	2–10	4.8 ± 1.9	2.5–8
Pain Severity	**n**	**%**	**n**	**%**	**n**	**%**
No pain (0)	–	–	–	–	–	–
Little pain (1)	8	26.7	8	26.7	11	36.7
Medium pain (2)	12	40.0	13	43.3	11	36.7
Large pain (3)	8	26.7	8	26.7	8	26.7
Worst possible pain (4)	2 $X^2 = 2.471$ p = .291	6.7	1	3.3	–	–
	M* ± *SD	***Min-Max***	***M* ± *SD***	***Min-Max***	***M* ± *SD***	***Min-Max***
Pain intensity ratings (0–10)	5.2 ± 2.2 $X^2 = 1.616$ p = .446	2.5–10	5.3 ± 2.0	2–10	4.8 ± 1.9	2.5–8
Pain Quality	***M* ± *SD***	***Min-Max***	***M* ± *SD***	***Min-Max***	***M* ± *SD***	***Min-Max***
Type of Word						
Sensory	6.5 ± 3.0	1–15	6.6 ± 3.5	1–15	6.0 ± 3.8	1–15
Evaluative	2.1 ± 1.4	0–6	1.8 ± 1.1	0–4	1.4 ± 0.9	0–3
Affective	2.2 ± 1.7	0–6	1.9 ± 1.3	0–6	1.9 ± 1.3	0–6
Temporal	2.8 ± 1.5	1–6	2.9 ± 1.4	1–6	2.7 ± 1.4	1–6
	M* ± *SD	***Min-Max***	***M* ± *SD***	***Min-Max***	***M* ± *SD***	***Min-Max***
Total number of word descriptors	13.5 ± 5.8 $X^2 = 2.471$ p = .291	4–27	13.1 ± 5.6	4–29	11.9 ± 5.8	4–29

[a] Multiple fields are marked.

Table 2
Patient characteristics (n = 96).

	M ± *SD*	*Min-Max*
Age	11.7 ± 3.2	8–17
Gender	***n***	**%**
Boy	58	60.4
Girl	38	39.6
Diagnosis	***n***	**%**
ALL	42	43.8
AML	6	6.2
Ewing sarcoma	18	18.8
Osteosarcoma	10	10.4
Neuroblastoma	7	7.3
Lymphoma	12	12.5
Mesenchymal tumor	1	1.0
	M* ± *SD	***Min-Max***
Number of chemotherapy cure	4.1 ± 3.6	1–15
Site where chemotherapy received	**n**	**%**
Inpatient	86	89.6
Outpatient	10	10.4
Painful procedures in today and the past days	**n**	**%**
Port needle change	36	37.5
Lumbar puncture	14	14.6
None	46	47.9

the same meanings in Turkish were eliminated, resulting in the number of words being decreased to 63 words.

Content validity is the most commonly used method for obtaining the validity of a measure. With this method, it is important that experts reach a consensus on the accuracy and adequacy of what is being proposed (Crestani et al., 2017). For this study, expert opinions were taken from pediatric hematologist-oncologists, experienced pediatric nurses, and pediatric nursing academicians who conducted several studies on pediatric pain. There was perfect agreement among the experts for the developed CVI.

Some words were removed from the wording list with Q-sort methodology. This method was also used in the Spanish and Portuguese validations of APPT (Fernandes et al., 2015; Van Cleve et al., 2001). Although other validity methods have also been used to validate APPT, it was very important that the word descriptors used in this scale were able to be understood by Turkish children for describing the quality of pain. With the Q-sort method, the words that the Turkish children were capable of understanding were identified and then included on the list to allow the children to describe their pain. The number of words was reduced to 56 during the APPT validity process.

The total number of body areas marked on the BOD, pain severity, pain intensity ratings and total number of word descriptors were compared in each of the three measures, but no difference was found ($p > .05$). In the study by Van Cleve et al. (2001), where test-retest reliability was performed with three children once every two weeks, it was determined that the participants selected 46%, 10% and 1.5% of the same words to describe pain. These results from could be attributed to the intervals of time that the test-retest was performed and to the fact

Table 3
Pain location, severity and quality (n = 96).

Pain Location[a]	*n*	%
Front		
Upper extremities	18	18.8
Lower extremities	35	36.5
Head and neck	34	35.4
Abdomen	13	13.5
Chest	36	37.5
No marked	9	9.4
Back		
Lower extremities	20	20.8
Shoulder	26	27.1
Head	4	4.2
No marked	51	53.1
The total number of body area marked on BOD	***M* ± *SD***	***Min-Max***
	1.8 ± 1.0	1–5
Pain Severity	***n***	***%***
No pain (0)	–	–
Little pain (1)	29	30.2
Medium pain (2)	38	39.6
Large pain (3)	25	26.0
Worst possible pain (4)	4	4.2
Pain intensity ratings	***M* ± *SD***	***Min-Max***
	5.2 ± 2.1	2–10
Pain descriptors[a]	***n***	***%***
Sensory		
Aching	59	61.5
Like a pin	39	40.6
Tight	39	40.6
Numb	37	38.5
Sore	35	36.5
Shooting	34	35.4
Throbbing	33	34.4
Biting	32	33.3
Hot	27	28.1
Like an ache	25	26.0
Stiff	24	25.0
Stinginig	21	21.9
Cutting	21	21.9
Pounding	19	19.8
Pressure	18	18.8
Cramping	17	17.7
Like a sharp knife	15	15.6
Swollen	14	14.6
İtching	13	13.5
Burning	13	13.5
Blistering	11	11.5
Like a pinch	11	11.5
Scratching	10	10.4
Hurting	10	10.4
Sharp	9	9.4
Like a hurt	8	8.3
Stabbing	8	8.3
Shocking	6	6.2
Like a sting	6	6.2
Crushing	5	5.2
Punching	1	1.0
Evaluative		
Uncomfortable	63	65.6
Bad	37	38.5
Annoying	31	32.3
Miserable	19	19.8
Never goes away	16	16.7
Horrible	14	14.6
Uncontrollable	13	13.5
Affective		
Crying	29	30.2
Awful	23	24.0
Sickening	20	20.8
Screaming	15	15.6
Terrifying	13	13.5
Dizzy	12	12.5
Frightening	11	11.5
Suffocating	7	7.3
Dying	7	7.3
Temporal		
Sometimes	55	57.3
Off and on	28	29.2
Comes on all of a sudden	56	58.3
Once in a while	41	42.7
Steady	36	37.5
Continuous	32	33.3
Forever	20	20.8
Always	19	19.8
Constant	13	13.5
Pain Quality	***M* ± *SD***	***Min-Max***
Type of Word Descriptors		
Sensory	6.4 ± 3.5	1–15
Evaluative	2.0 ± 1.5	0–6
Affective	1.7 ± 1.2	0–6
Temporal	2.7 ± 1.4	1–6
Total number of word descriptors	13.0 ± 5.7	4–29

[a] Multiple fields are marked.

that pain episodes were measured according to common, everyday experiences (Van Cleve et al., 2001). Other scales tend to be numeric, including the APPT, which has a 0–10 cm pain intensity measure. In continuing with Van Cleve's study, the APPT word list was used to measure the quality of pain in five children with leukemia, and data were collected seven times. Out of these seven separate collections, a complete list of the most frequently selected words was generated. Concurrent validity of the quality of pain based on word list scores was explored in relation to intensity and location. The sensory, affective, evaluative, and temporal word scores were reported to have a significant direct correlation with the total number of words and the number of pain sites (Van Cleve et al., 2001). There was no comparison made between the measures conducted in the present study. The ICC from the present study showed moderate-good reliability for the total number of body areas marked on the BOD, pain severity, pain intensity ratings and total number of word descriptors. In the Friedman test, there was no difference found between the total number of body areas marked on BOD, pain severity, pain intensity ratings and total number of word descriptors ($p > .05$). This result suggests that the APPT is a multi-dimensional scale which can also be used for repetitive measures.

The reliability test involved the participation of 96 children in this study. Similar to our reliability findings, results from the study by Jacob et al. (2008), which involved 44 Spanish-speaking children with cancer, showed that the most frequently marked locations on the BOD were the abdomen (53.8%), back (46.2%), and chest (30.8%). The mean pain intensity rating was 5.7 ± 2.7, with most of the children defining their pain experience to be at a moderate to severe level, and an average of 12.1 ± 7.9 words were selected (Jacob et al., 2008).

The most frequently used words (over 50% of patients) to describe the quality of pain were annoying, uncomfortable, hurt, sometimes, and throbbing. Correlations were found among the total number of word descriptors and total number of sensory, affective, evaluative, and temporal word descriptors ($p < .001$). Van Cleve et al. (2001) reported in their study that over half of the children with leukemia used the words aching, uncomfortable, sometimes, crying, sore, awful and crying, and they found a correlation between the total number of word

Table 4
Correlations of pain location, severity and quality (n = 96).

	1	2	3	4	5	6	7	8
1. The total number of body area marked on BOD	1.0							
2.Pain severity	.123	1.0						
3.Pain intensity ratings	.184	.954**	1.0					
4.Sensory	.592**	.373**	.405**	1.0				
5.Affective	.065	.332**	.324**	.320**	1.0			
6.Evaluative	.241**	.227**	.236**	.549**	.403**	1.0		
7. Temporal	.395**	.117	.162	.409**	.007	.377**	1.0	
8. Total number of Word descriptors	.528**	.381**	.414**	.911**	.508**	.763**	.596**	1.0

**p < .001.

descriptors and the total number of sensory, affective, evaluative, and temporal word descriptors. This word list is used to define whether the quality of pain is sensory, affective, evaluative or temporal. A pain approach specific to the quality of pain can be defined and any change in the quality of pain and the efficiency of pain management can be easily followed by repetitive measures.

Correlations were found between the total number of body areas marked on the BOD and the total number of word descriptors (r = .52), between the pain severity and pain intensity ratings (r = .95) and between the pain severity and the total number of word descriptors (r = .38). No correlations, however, were found between the total number of body areas marked on the BOD and pain severity or pain intensity ratings (p > .05). In contrast to this finding, Jacob et al. (2008) found a correlation between the number of body areas on the BOD and severity of pain (r = .45), but on the other hand, similar to our findings, they found a correlation between the number of body areas on the BOD and the total number of word descriptors (r = .59). The fact that there was no difference between the number of pain locations and pain severity or intensity indicates that pain severity or intensity can be low or high, independent of the number of pain locations. If the location of pain is known, non-pharmacological pain management methods, such as massage, aromatherapy, caressing and warm applications, can be applied. Moreover, knowledge of the severity of the pain can serve to show that in addition to non-pharmacological pain management, pharmacological pain management may also be necessary. Therefore, there is no relationship between the number of pain locations and pain severity or intensity.

Correlations were found between the total number of body areas marked on the BOD, pain severity, pain intensity ratings, total number of word descriptors, total number of sensory, affective, evaluative and temporal word descriptors (α = .78). A Cronbach's alpha of above 0.7 is considered acceptable (Polit and Beck, 2018). This result indicates the internal consistency of all these variables. Similarly, Jacob et al. (2008) showed correlations between the total number of body areas marked on the BOD, pain intensity ratings and total number of word descriptors (α = .73).

Validity and reliability are important for establishing an international understanding of the measurement properties of these scales. Such studies enable scales to be used in different cultural settings. This study can serve as a model particularly for validity and reliability studies in a pediatric group. Formal translations alone are not sufficient for a pediatric population; cultural adaptations are also necessary to ensure a healthy process. This multidimensional scale is a significant tool for assessing pain that is not able to be clearly understood due to its multidimensional nature. This scale can be easily used in clinical studies of pain.

This study did have some limitations, primarily the fact that besides the APPT, other pain scales can also be used for sake of comparison. However, for the purposes of this study, it was not required as there are no other scale forms similar to that provided by the APPT.

5. Conclusion

The results of this study indicate that the Turkish version of the APPT is a reliable and valid instrument for the measurement of pain in Turkish children with cancer. The reliability and validity of the APPT should be tested in different pediatric patients.

Conflicts of interest

The authors report no actual or potential conflicts of interests.

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