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Original research

Child perceptions questionnaire 11-14 in Turkish language in an orthodontic patient sample

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Purpose
The Child Perceptions Questionnaire 11-14 (CPQ 11-14) is a generic tool that was developed to measure oral health-related quality of life in early adolescents. The aim of this study was to prepare a Turkish version of the CPQ 11-14 and to test its psychometric properties in an adolescent orthodontic patient sample.

Materials and Methods
The questionnaire was adapted to Turkish using a forward backward translation method, and it was found to be understandable in a pilot study (n=15). The Turkish version of the CPQ 11-14 was administered to 200 orthodontic consultation patients (aged 11–14 years). Retests were conducted in 50 patients 2 weeks after the first tests. The ICON index was used to determine the orthodontic treatment need. Decayed, missing, and filled teeth were also recorded with the DMFT index. Spearman correlations and t-tests were used to assess validity. Internal consistency was assessed using Cronbach's alpha coefficient, and intraclass correlation coefficients were calculated to assess test–retest reliability.

Results
Significant positive correlations were found between CPQ 11-14 scores and the global ratings of oral health (r=0.381), global ratings of well-being (r=0.350), ICON scores (r=0.211), and DMFT scores (r=0.233), supporting construct validity. Children who needed orthodontic treatment had a worse quality of life than those who did not need orthodontic treatment (p=0.016). Cronbach's alpha and intraclass correlation coefficients were calculated as 0.917 and 0.817, respectively, demonstrating good internal consistency and acceptable test–retest reliability.

Conclusion
The Turkish version of the CPQ 11-14 was found to be valid and reliable in 11–14-year-old orthodontic patients.

Keywords: *Orthodontics, quality of life, child perceptions questionnaire, validation, Turkish*

Introduction

WHO defined health as "the state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" Since then biomedical health model evolved into the biopsychosocial health model and quality of life assessments have gained attention in medicine (1, 2). According to WHO, quality of life is defined as' 'an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns. It is a broad ranging concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment" (3).

Oral health is also known to influence the quality of life. Although research

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on the oral health-related quality of life began in adult populations, more recently, adolescents' oral health-related quality of life assessments gained attention as well (4). This later growing interest was explained as a result of the inherent difficulties with the measurement of abstract concepts in growing individuals who are also developing regarding self-concept and cognitive capabilities (5). Therefore, further studies were carried out to provide quality of life assessment instruments for specific age groups (5–7). Child Perceptions Questionnaire 11-14 (CPQ 11-14) was developed to measure the oral health-related quality of life in 11-14 year olds with dental, oral and orofacial problems and became the most frequently used tool in the literature (5, 8).

Oral health-related quality of life assessments became increasingly popular in the field of orthodontics as well, mostly to determine treatment need or to assess treatment outcomes (9). Although CPQ 11-14 is increasingly being used in the orthodontic literature, there is no validated adaptation for Turkish culture and language. Therefore, the aim of this study was to adapt CPQ 11-14 to Turkish culture and language and to test its validity and reliability in11-14 year old patients who had arranged for orthodontic consultations. The null hypothesis was stated as CPQ 11-14 Turkish version is not valid nor reliable to measure oral health-related quality of life in orthodontic patients.

Materials and Methods

Ethical approval

Ethical approval was granted by the Ethics Committee of Yüzüncü Yıl University, Faculty of Medicine (decision number 02; dated 18.04.2014). Informed consent was obtained from all of the participants included in the study.

Description of the questionnaire

CPQ 11-14 consists of 2 global questions addressing oral health and well-being and 37 questions on four different domains. These questions ask the frequency of events and feelings in the last three months about oral symptoms (6), functional limitations (9), emotional well-being (9) and social well-being (13). The questionnaire has a Likert scale structure and response options are; ''0=Never", ''1=Once/twice", ''2=Sometimes, ''3=Often and ''4=every day/almost every day". Higher scores indicate worse oral health-related quality of life (5).

Translation, adaptation and pretesting of the CPQ 11-14

Guidelines recommended in the literature for cross-cultural scale adaptations were followed during the preparation of the CPQ 11-14 Turkish questionnaire (10–12). In the first part of the study, CPQ 11-14 was forward translated into the Turkish language by two translators. Both translators were fluent in English and talked Turkish as their native language. While one of the translators had a medical background, the other did not have any knowledge about the CPQ 11-14 questionnaire or the concept of oral health-related quality of life. After the synthesis of translated questionnaires, two other translators prepared two back translations. These two translators talked English as the native language, and both were fluent in Turkish. Neither of them had seen the original CPQ 11-14 questionnaire before. At last, the translators and the author of this paper gathered all four questionnaires together and evaluated CPQ 11-14 Turkish form regarding face and content validity.

Pilot testing of the questionnaire was performed on 15 volunteers who have applied to the Yüzüncü Yıl University, Faculty of Dentistry, and Department of Orthodontics for consultation. Each one of the volunteers was interviewed about his/her understanding for all of the explanations, questions and answer options in the questionnaire and, the questionnaire was found to be generally understandable. Turkish version of the questionnaire was shown in Table 1.

Application of the questionnaire

Two hundred children aged 11-14 who have applied for orthodontic consultation between 17.04.2014 and 27.12.2014 were included in the main study. Inclusion criteria were defined as the consent of the parent and the child, and the child's proficiency in Turkish reading and writing. Patients who had clefts of the lip or palate or any other syndromes were excluded. Parents were asked to stay in the waiting lounge to avoid interference in the responses. The questionnaires were collected and checked for missing responses before the children left the clinic. The participants were invited to answer any missing questions when existed. To assess test-retest reliability, 50 volunteers who had to take appointments for orthodontic record taking or reevaluation of oral hygiene problems were scheduled for two weeks apart and the CPQ 11-14 was applied again.

Clinical measures

During clinical examination, the numbers of decayed, missing and, filled teeth were recorded using DMFT index. Missing teeth related to congenital absence were not included. Orthodontic treatment need was determined using ICON (Index of Complexity, Outcome, and Need). Aesthetical assessment, crowding or spacing amount in the upper arch, cross bites, overbite-open bite and anteroposterior relation of the buccal segments are considered in orthodontic treatment need assessment using ICON index (13).

Statistical analysis

All analyses were performed with IBM SPSS Statistics software package ver. 24.0 (IBM Corp.; Armonk, NY, USA).Overall and subscale CPQ 11-14 scores were calculated for each respondent. Descriptive statistics (mean and standard deviation) for CPQ 11-14 overall and subscale scores were performed. Independent samples t-tests were used to compare CPQ 11-14 overall and subscale scores in patients according to orthodontic treatment need to assess discriminant validity. Spearman rank correlations were calculated between

CPQ 11-14 overall and subscale scores and global ratings of oral health, global ratings of overall well-being, DMFT scores, and ICON scores to test the hypotheses for construct and discriminant validity. Internal consistency was calculated with Cronbach's alpha coefficients and, test-retest reliability was assessed using intra-class correlation coefficients.

Results

Independent samples t-test results for the comparisons of CPQ 11-14 overall and subscale scores between patients according to their orthodontic treatment need status are shown in Table 2. Patients who had orthodontic treatment need ac-

Table 1. *Turkish translation of the Child Perceptions Questionnaire 11-14 (CPQ 11-14) which was used in this study*

Genel sorular
Sizce dişlerinizin, dudaklarınızın, çenelerinizin ve ağzınızın sağlığı nasıl?
Mükemmel/Çok iyi/İyi/Fena değil/Kötü
Dişlerinizin, dudaklarınızın, çenelerinizin veya ağzınızın durumu hayatınızı toplamda ne kadar etkiliyor?
Hiç/Çok az/Biraz/Fazla/Çok fazla
Ölçek soruları
SON ÜÇ AY İÇERİSİNDE NE SIKLIKLA...
1. Dişlerinizde, dudaklarınızda, çenelerinizde veya ağzınızda ağrı hissettiniz?
2. Dişetleriniz kanadı?
3. Ağzınızda yara oldu?
4. Nefesiniz kötü koktu?
5. Dişleriniz içine veya arasına yiyecekler takıldı?
6. Ağzınızın tavanına yiyecekler takıldı?
7. Ağızdan nefes aldınız?
8. Bir yemeği yemeniz diğer insanlardan daha uzun sürdü?
9. Uyumakta zorlandınız?
10. Elma, mısır veya biftek gibi yiyecekleri ısırmakta veya çiğnemekte zorlandınız?
11. Ağzınızı çok açmakta zorlandınız?
12. Herhangi bir kelimeyi söylemekte zorlandınız?
13. İstediğiniz yiyecekleri yemekte zorlandınız?
14. Pipetle birşey içmekte zorlandınız?
15. Sıcak veya soğuk gıdaları yemekte veya içmekte zorlandınız?
16. Sinirlendiniz veya hayal kırıklığına uğradınız?
17. Kendinizden emin olmadığınızı hissettiniz?
18. Utangaç veya mahçup hissettiniz?
19. Diğer insanların dişleriniz, dudaklarınız, çeneleriniz veya ağzınız hakkında düşüncelerinden endişelendiniz?
20. Diğer insanlar kadar iyi görünmediğinizden endişelendiniz?
21. Mutsuz oldunuz?
22. Endişelendiniz veya korktunuz?
23. Diğer insanlar kadar sağlıklı olmadığınızdan endişelendiniz?
24. Diğer insanlardan farklı olduğunuzdan endişelendiniz?
25. Ağrı, diş hekimi randevusu veya diş hekiminde yapılan işlem yüzünden okula gidemediniz?
26. Okulda dikkatinizi toplamakta zorlandınız?
27. Ev ödevinizi yapmakta zorlandınız?
28. Sınıfta yüksek sesle konuşmak veya okuma yapmak istemediniz?
29. Spor, tiyatro, müzik veya okul gezisi gibi etkinliklere katılmak istemediniz?
30. Diğer çocuklarla konuşmak istemediniz?
31. Diğer çocuklarla birlikteyken gülmek veya kahkaha atmak istemediniz?
32. Flüt gibi bir müzik aleti çalmakta zorlandınız?
33. Diğer çocuklarla birlikte zaman geçirmek istemediniz?
34. Diğer çocuklarla veya ailenizle tartıştınız?
35. Diğer çocuklar sizinle dalga geçti veya size lakap taktı?
36. Diğer çocuklar tarafından dışlanmış hissettiniz?
37. Diğer çocuklar dişleriniz, dudaklarınız, çeneleriniz veya ağzınız hakkında sorular sordu?
Ölçek soruları için cevap seçenekleri Hiç/Bir-iki defa/Bazen/Sıklıkla/Hergün veya neredeyse hergün.

Table 2. *Discriminant validity: Overall and subscale scores for children with and without orthodontic treatment need as determined by Index of Complexity, Outcome, and Need (ICON) (*Independent samples t-test)*

	Orthodontic Treatment Need		
	Yes (n=140)	No (n=60)	p*
Total scale	41.40±20.67	34.03±17.14	0.016
Subscales			
Oral symptoms	7.99±3.46	7.33±3.49	0.220
Functional limitations	8.97±5.40	8.03±4.60	0.241
Emotional well-being	12.71±8.46	10.42±6.84	0.045
Social well-being	11.72±8.37	8.25±6.24	0.001

Table 3. *Discriminant validity: Rank correlations between DMFT and ICON scores, and overall and subscale scores (*Spearman's correlation coefficient)*

	DMFT		ICON	
	r*	p	r*	p
Total scale	0.233	0.001	0.211	0.003
Subscales				
Oral symptoms	0.145	0.041	0.019	0.787
Functional limitations	0.212	0.003	0.095	0.182
Emotional well-being	0.167	0.018	0.178	0.011
Social well-being	0.213	0.002	0.279	0.001

Table 4. *Construct Validity: Rank correlations between global ratings of oral health and well-being, and overall and subscale scores (*Spearman's correlation coefficient)*

	Global rating			
	Oral health		Overall well-being	
	r*	p	r*	p
Total scale	0.381	0.0001	0.350	0.0001
Subscales				
Oral symptoms	0.327	0.0001	0.167	0.018
Functional limitations	0.323	0.0001	0.161	0.022
Emotional well-being	0.325	0.0001	0.369	0.0001
Social well-being	0.301	0.0001	0.311	0.0001

Table 5. *Reliability statistics for total scale and subscales (*One-way random effect model; p<0.001 for all values)*

	Number of Items	Cronbach's Alpha (n:200)	İntra-class Correlation Coefficient (%95 CI)* (n:50)
Total scale	39	0.917	0.817 (0.574-0.922)
Subscales			
Oral symptoms	6	0.726	0.885 (0.733-0.951)
Functional limitations	9	0.708	0.733 (0.379-0.886)
Emotional well-being	9	0.895	0.780 (0.488-0.906)
Social well-being	13	0.831	0.799 (0.532-0.914)

cording to ICON index had significantly greater CPQ 11-14 overall, emotional well-being and social well-being subscale scores when compared to patients who did not have orthodontic treatment need (p=0.045, p=0.001, p=0.016 respectively). There were no statistically significant differences in oral symptoms or functional limitations scores between groups (p>0.05).

Rank correlations between CPQ 11-14 overall and subscale scores and, ICON and DMFT index scores are shown in Table 3. There was a statistically significant positive correlation between ICON scores and CPQ 11-14 overall scores (r=0.211, p=0.003). Among the subscale scores emotional and social well-being were positively correlated with ICON scores (r=0.178, p=0.011, r=0.279, p=0.001 respectively).There were no statistically significant correlations between ICON scores and oral symptoms or functional limitations.

Significant positive correlations were observed between DMFT scores and CPQ 11-14 with all of its subscales (oral symptoms; r=0.145, p=0.041, functional limitations; r=0.212, p=0.003, emotional well-being; r=0.167, p=0.018, social well-being; r=0.213, p=0.002, total scale; r=0.233, p=0.001). There were significant positive correlations between global ratings of oral health, overall well-being, and CPQ 11-14 scores. Besides, all of the subscale scores were also significantly correlated with global ratings (Table 4). Reliability statistics for CPQ 11-14 are shown in Table 5. CPQ 11-14 total scale alpha coefficient was calculated as 0.917 and subscale alpha coefficients were between 0.708 and 0.895. İntra-class correlation coefficient was 0.817 for the total scale and varied between 0.733 and 0.885 for the subscales.

Discussion

It is important to use mutual measurement tools in the quality of life studies just as in clinical studies to conduct cross-cultural research, to collect global evidence together and to compare research results among different studies (14). CPQ 11-14 has been reported to be the most frequently used oral health-related quality of life questionnaire for early adolescents (8, 15). It has been proved to be valid and reliable in many adaptation studies (14–22). However, there is currently no study in the literature demonstrating CPQ 11-14 Turkish version's psychometric properties.

Construct validity is one of the prerequisites for health-related quality of life scales. Correlations between similar tests and comparison of test scores between patients with different clinical characteristics (known groups) can be utilized to test construct validity (23, 24). The null hypothesis was rejected. The results of this study have shown that there were significant correlations between CPQ 11-14 total and subscale scores and, both of the two global questions that were asked at the beginning of the questionnaire. This finding provides evidence that CPQ 11-14 Turkish version has construct validity, and it is similar to those of other studies which have validated CPQ 11-14 across several languages (5, 16, 17). Negative relations between the number of decayed, missing and filling teeth and oral health-related quality of life with all subdimensions were also observed (Table 3) which is in agreement with Canadian pedodontic patients (5) providing additional evidence for construct validity.

The results have shown a negative relation between malocclusion severity and oral health-related quality of life with emotional and social well-being domains (Table 3). When patients were compared according to their orthodontic treatment need status, significant differences were also observed in aforementioned dimensions (Table 2). This finding is also consistent with previous research (25–27). The reason why malocclusion severity is associated with emotional and social well-being but not oral symptoms or functional limitations can be explained by the fact that people often seek orthodontic treatment for aesthetic improvement (28) but not that much for physical reasons like pain or gingival bleeding or functional problems like chewing, mouth opening or speech.

Reliability of the CPQ 11-14 was evaluated with test-retest and internal consistency calculations. Retest reliability is the stability of the observed scores from a scale among different administrations. It is important to conduct retests within a reasonable period concerning the construct of interest. Longer retest time intervals may lead to decreases in reliability calculations since health is variable and patients may change their opinions about their health over time. Short retest intervals are also undesirable since patients may remember their old answers and some even think of the retest method as a memory test (29). Therefore, retest appointments were scheduled two weeks after the initial administrations with regard to similar studies (5, 14, 16). Intra-class correlation coefficients were calculated as 0.817 for total scale and 0.885, 0.733, 0.780 and 0.799 for subscales thus retest reliability coefficients were found to be acceptable (Table 5).

Cronbach's alpha coefficient examines the consistency between individual items and total scale or subscale scores (30). In this study, alpha coefficients were calculated as; 0.917 for total scale, 0.726 for Oral Symptoms, 0.708 for Functional Limitations, 0.895 for Emotional Well-Being and 0.831 for Social Well-Being subscales (Table 4). Alpha coefficients of the Turkish version are found to be similar to those observed in the original form (5). Internal consistency is considered ideal when alpha coefficients are between 0.70 and 0.95 (24).

Conclusion

CPQ 11-14 Turkish form is a valid instrument to measure oral health-related quality of life in orthodontic clinics. Hopefully, with the inclusion of the quality of life measurements in orthodontic clinical trials, those aspects of treatment that are important for patients would be evaluated as well as further information about the psychometric properties of the CPQ 11-14 Turkish form would be attained. Future studies would be appropriate to evaluate the performance of CPQ 11-14 Turkish version in general (non-orthodontic) samples.

Ethics Committee Approval: Ethical approval was granted by the Ethics Committee of Yüzüncü Yıl University, Faculty of Medicine (decision number 02; dated 18.04.2014).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: CA designed the study, analyzed the data and wrote the paper. CA, ACY, AA, DSS generated and gathered the data. All authors have approved the final version of this article.

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Türkçe öz: *Ortodontik Hasta Örnekleminde Çocuk Algı Ölçeği 11-14 Türkçe Formunun Değerlendirilmesi. Amaç:Çocuk Algı Anketi 11-14 (CPQ 11-14), ergenlik döneminde ağızsağlığı ile ilgili yaşam kalitesini ölçmek için geliştirilen bir araçtır. Bu araştırmanın amacı CPQ 11-14'ün Türkçe uyarlamasını hazırlamak ve ortodontik bir hasta örnekleminde psikometrik özelliklerini test etmektir. Gereç ve Yöntem: Anket, çeviri geri çeviri yöntemiyle Türkçe'ye uyarlanmıştır. Anketin anlaşılırlığı 15 kişinin katıldığı bir ön çalışma ile belirlenmiştir. CPQ 11-14 Türkçe formu, 200 ortodontik muayene hastasına (11-14 yaş) uygulanmıştır. İlk testlerden iki hafta sonra 50 hasta ile tekrar test uygulaması yapılmıştır. Ortodontik tedavi ihtiyacını ölçmek için ICON indeksi kullanılmıştır. Çürük, eksik ve dolgulu dişler DMFT indeksi ile kaydedilmiştir. Ölçeğin geçerliği, Spearman korelasyonları ve t-testleri kullanılarak değerlendirilmiştir. Ölçeğin iç tutarlık ve test-tekrar test guvenirlikleri Cronbach alfa vesınıf içi korelasyon katsayılarıkullanılarak belirlenmiştir. Bulgular: CPQ 11-14 puanları ile ağız sağlığının geneldurumu (r:0,381), genel iyi oluş (r:0,350), ICON skorları (r:0,211) ve DMFT puanları (r:0,233) arasında anlamlı pozitif korelasyonların gözlenmesi ile ölçeğin yapısal geçerliğe sahip olduğu desteklenmiştir. Buna ek olarak, ortodontik tedaviye ihtiyaç duyan çocukların, ortodontik tedaviye ihtiyaç duymayan çocuklara göre daha kötü yaşam kalitesine sahip olduğugözlenmiştir (p=0,016). Cronbach alfa ve sınıf içi korelasyon katsayıları 0,917 ve 0,817 olarak hesaplanmış ve ölçeğiniyi derecede iç tutarlılık ve kabul edilebilir derecede tekrar test güvenirliğine sahip olduğu bulunmuştur. Sonuç: CPQ 11-14 Türkçe uyarlaması, 11-14 yaş grubundaki ortodontik muayene hastalarında geçerli ve güvenilir bir ölçektir. Anahtar Kelimeler: Ortodonti, yaşam kalitesi, çocuk algı ölçeği, geçerlik,* Türkçe

References

1. Engel G. The need for a new medical model: A challenge for biomedicine. Science 1977; 196: 129-36. [CrossRef]
2. Testa MA, Simonson DC. Assessment of Quality-of-Life Outcomes. N Engl J Med 1996; 334: 835-40. [CrossRef]
3. WHO. Study protocol for the World Health Organization project to develop a Quality of Life assessment instrument (WHOQOL). Qual Life Res 1993; 2: 153-9. [CrossRef]
4. Broder HL. Children's oral health-related quality of life. Community Dent Oral Epidemiol 2007; 35: 5-7. [CrossRef]
5. Jokovic A, Locker D, Stephens M, Kenny D, Tompson B, Guyatt G. Validity and reliability of a questionnaire for measuring child oral-health-related quality of life. J Dent Res 2002; 81: 459-63. [CrossRef]
6. Gherunpong S, Tsakos G, Sheiham A. Developing and evaluating an oral health-related quality of life index for children; the CHILD-OIDP. Community Dent Health 2004; 21: 161-9.
7. Broder HL, McGrath C, Cisneros GJ. Questionnaire development: face validity and item impact testing of the Child Oral Health Impact Profile. Community Dent Oral Epidemiol 2007; 35: 8-19. [CrossRef]

8. Gilchrist F, Rodd H, Deery C, Marshman Z. Assessment of the quality of measures of child oral health-related quality of life. BMC Oral Health 2014; 14: 40. [CrossRef]
9. Cunningham S, Hunt N. Quality of life and its importance in orthodontics. J Orthod 2001; 28: 152-8. [CrossRef]
10. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. Spine (Phila Pa 1976) 2000; 25: 3186-91. [CrossRef]
11. Guillemin F, Bombardier C, Beaton D. Cross-cultural adaptation of health-related quality of life measures: Literature review and proposed guidelines. J Clin Epidemiol 1993; 46: 1417-32. [CrossRef]
12. Sousa VD, Rojjanasrirat W. Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: a clear and user-friendly guideline. J Eval Clin Pract 2011; 17: 268-74. [CrossRef]
13. Daniels C, Richmond S. The development of the index of complexity, outcome and need (ICON). J Orthod 2000; 27: 149-62. [CrossRef]
14. McGrath C, Pang HN, Lo ECM, King NM, Hägg U, Samman N. Translation and evaluation of a Chinese version of the Child Oral Health-related Quality of Life measure. Int J Paediatr Dent 2008; 18: 267-74. [CrossRef]
15. Olivieri A, Ferro R, Benacchio L, Besostri A, Stellini E. Validity of Italian version of the Child Perceptions Questionnaire (CPQ 11-14). BMC Oral Health 2013; 13: 1-7. [CrossRef]
16. Barbosa T, Tureli MCM, Gavião MBD. Validity and reliability of the Child Perceptions Questionnaires applied in Brazilian children. BMC Oral Health 2009; 9: 1-8. [CrossRef]
17. Bekes K, John MT, Zyriax R, Schaller H-G, Hirsch C. The German version of the Child Perceptions Questionnaire (CPQ-G11-14): Translation process, reliability, and validity in the general population. Clin Oral Investig 2012; 16: 165-71. [CrossRef]
18. Brown A, Al-Khayal Z. Validity and reliability of the Arabic translation of the child oral-health-related quality of life questionnaire (CPQ 11 – 14) in Saudi Arabia. Int J Paediatr Dent 2006; 16: 405-11. [CrossRef]
19. Goursand D, Paiva SM, Zarzar PM, Ramos- ML, Cornacchia GM, Pordeus IA, et al. Cross-cultural adaptation of the Child Perceptions Questionnaire 11 – 14 (CPQ 11–14) for the Brazilian Portuguese language. Health Qual Life Outcomes 2008; 6: 1-7. [CrossRef]
20. Marshman Z, Rodd H, Stern M, Mitchell C, Locker D, Jokovic A, Robinson PG. An evaluation of the Child Perceptions Questionnaire in the UK. Community Dent Health 2005; 22: 151-5.
21. Turton BJ, Thomson WM, Foster Page L a, Saub RB, Razak IA. Validation of an Oral Health-Related Quality of Life Measure for Cambodian Children. Asia Pac J Public Health 2015; 27: NP2339-49. [CrossRef]
22. Wogelius P, Gjørup H, Haubek D, Lopez R, Poulsen S. Development of Danish version of child oral-health-related quality of life questionnaires (CPQ8-10 and CPQ11-14). BMC Oral Health 2009; 9: 11. [CrossRef]
23. Guyatt G, Feeny DH, Patrick DL. Measuring health-related quality of life. Ann Intern Med 1993; 118: 622-9. [CrossRef]
24. Terwee CB, Bot SD, de Boer MR, van der Windt DA, Knol DL, Dekker J, et al. Quality criteria were proposed for measurement properties of health status questionnaires. J Clin Epidemiol 2007; 60: 34-42. [CrossRef]
25. O'Brien K, Wright JL, Conboy F, Macfarlane T, Mandall N. The child perception questionnaire is valid for malocclusions in the United Kingdom. Am J Orthod Dentofac Orthop 2006; 129: 536-40. [CrossRef]
26. O'Brien C, Benson PE, Marshman Z. Evaluation of a quality of life measure for children with malocclusion. J Orthod 2007; 34: 185-93. [CrossRef]
27. Kok YV, Mageson P, Harradine NW, Sprod AJ. Comparing a quality of life measure and the aesthetic component of the index of orthodontic treatment need (IOTN) in assessing orthodontic treatment need and concern. J Orthod 2004; 31: 312-8. [CrossRef]
28. Bos A, Hoogstraten J, Prahl-Andersen B. Expectations of treatment and satisfaction with dentofacial appearance in orthodontic patients. Am J Orthod Dentofac Orthop 2003; 123: 127-32. [CrossRef]
29. Polit DF. Getting serious about test-retest reliability: A critique of retest research and some recommendations. Qual Life Res 2014; 23: 1713-20. [CrossRef]
30. Streiner DL. Starting at the beginning : An introduction to coefficient alpha and internal consistency. J Pers Assess 2003; 80: 99-103. [CrossRef]