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RESEARCH ARTICLE / *ARAŞTIRMA*

Validity and Reliability Testing of a Quality of Life Measurement Instrument "Child Health and Illness Profile-CHIP-AE" For Adolescents Aged Between 12 and 17

"Çocuk Sağlığı ve Hastalık Profili-CHIP-AE" Yaşam Kalitesi Ölçüm Aracının 12-17 Yaş Arası Ergenler için Geçerlik ve Güvenilirliği

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ABSTRACT

Objective: In this study, it was aimed to make a cultural adaptation of the Child Health and Illness Profile- Adolescents (CHIP-AE) measurement tool for adolescents, which was developed by Starfield in 1993, to analyze whether the Turkish version is reliable, valid and applicable.

Material and Methods: The sample of the study consisted of adolescents aged between 12 and 17, receiving inpatient treatment in the Children's Health and Diseases Clinic in the Faculty of Medicine at Eskisehir Osmangazi University, and adolescents aged between 12 and 17, studying in a private school. The original version of CHIP-AE in English was first translated into Turkish, and then back translated. All stages of the cultural adaptation were performed by a specialized committee. Confirmatory Factor Analysis was conducted on LISREL to test the validity of the instrument.

Results: For the purpose of this study, the Turkish version of the CHIP-AE (12-17 years) was administered to 252 adolescents receiving inpatient treatment [148 (58.7%) female; 104 (41.3%) male] and 223 healthy adolescents [109 (48.9%) female; 114 (51.1%) male]. The average age was 14.32±1.70 in the group of ill adolescents, and 14.57±1.51 in the group of healthy adolescents. With regard to reliability, Cronbach's was 0.852 in the group of ill adolescents, and 0.807 in the group of healthy adolescents. These values refer to perfect reliability. Confirmatory Factor Analysis (CFA) was conducted to test construct validity. Model fit results obtained in CFA were as follows: x^2=1622.07, df=1061, p-value=0.000 RMSEA=0.046 in the group of ill adolescents; and x^2=2082.33, df=1208, p-value=0.000 RMSEA=0.057 in the group of healthy adolescents. Thus, validity results comply with the standards.

Conclusion: This study suggests that the version developed for Turkish adolescents has high validity for the groups of both healthy and ill Turkish adolescents.

Keywords: Adolescent, Child Health Illness Profile-CHIP-AE, Quality of Life for Children

ÖZ

Amaç: Bu araştırmada 1993 yılında Starfield tarafından geliştirilmiş olan Child Health an Illness Profile-CHIP-AE ölçüm aracının ergenler için kültürel adaptasyonu ile beraber, Türkçe versiyonunun geçerlilik ve güvenirliliğinin yapılması amaçlanmıştır.

Gereç ve Yöntem: Araştırma örneklemini ESOGÜ Tıp Fakültesi Hastanesi Çocuk Sağlığı ve Hastalıkları Kliniğinde yatan ergenler ile, özel bir okulda eğitime devam eden 12–17 yaş ergen oluşturmuştur. CHIP-AE İngilizce orijinal versiyonunun ileri ve geri çevirileri yapılmıştır. Kültürel uyarlama süreci için tüm adımlar bir uzman komite tarafından gerçekleştirilmiştir. Geçerliliğin belirlenmesinde LİSREL istatistiksel program ile doğrulayıcı faktör analizi yapılmıştır.

Bulgular: Çalışmada CHIP-AE (12-17) yaş Türkçe versiyonu; 252 hasta ergene [148 (%58,7) kız; 104 (%41,3) erkek], 223 [109 (%48,9) kız; 114 (%51,1) erkek] sağlıklı ergene uygulanmıştır. Yaş ortalamaları hasta ergenlerde 14,32±1,70; sağlıklı ergenlerde 14,57±1,51 olarak gerçekleşmiştir. Kullanılan CHIP-AE formunun güvenirlilik değerlendirilmesi hasta ergenlerde Cronbach's α değerli 0,852; Sağlıklı ergenlerde 0,807 olarak gerçekleşmiştir. Bu değerin mükemmel güvenirlilik gösteren nitelikte olduğunu söyleyebiliriz. Yapı geçerliliği bağlamında Doğrulayıcı Faktör Analizi (DFA) uygulanmıştır. DFA ölçüm modeli uyum sonuçları: hasta ergenlerde x^2=1622,07, df=1061, p-value=0,000, RMSEA=0,046; sağlıklı ergenlerde x^2=2082,33, df=1208, p-value=0,000 RMSEA=0,057 olarak geçerlilik ölçümleri standartlara uygun olarak değerlendirilmiştir.

Sonuç: Bu çalışma, Türk ergen grubu için geliştirilen versiyonun hem sağlıklı hem de hasta ergenler için yüksek geçerliliğe sahip olduğunu göstermektedir.

Anahtar Kelimeler: Çocuk Sağlığı Hastalık Profili-CHIP (AE), Çocuklarda Yaşam Kalitesi, Ergenler

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INTRODUCTION

Quality of life; The World Health Organization Quality of Life (WHOQOL) Group defines it as "the individual's perception of their position in life in the context of their culture and value systems and in the context of their goals, expectations, standards and concerns." (1).

Quality of life focuses on how one perceives and feels the perception of life in terms of values and culture systems. This definition shows that the quality of life is closely related to the subjective perception of health (2).

It is of particular importance for the well-being and health of adolescents to define their perception and comprehension of health, their possible responses to an illness or disorder, their potential to cope with a disorder, approaches that families and healthcare professionals should adopt, adolescents' expectations from the family and healthcare personnel, and to integrate these definitions with quality of life.

Adolescence, including the ages from 12 to 17, is the period of transition from childhood to adulthood. It is a special developmental stage marked by biological, psychological and social changes. Individuals in adolescence take more active and independent roles in several domains of life in order to seek their identity, construct their value system, and gain independence in social and professional terms. It is particularly challenging for adolescents to stay in hospital for, they are likely to believe that a health condition can harm their physical appearance, slow down their physical functions, and threaten their relationship with the opposite sex. They tend to resist any limitations on physical activities, and are disturbed by any disorder that may endanger their athletic skills. Primary needs of adolescents staying in the hospital are family support, hobbies and interests, sports, music, television, computer, privacy, books, mobile phone and internet, and friends.

Assessment of quality of life varies by each developmental stage (e.g. early childhood, preschool, school age, adolescence, adulthood). For a child with a chronic disease, it may be harder to complete each developmental stage successfully if the chronic disease has negative effects on mental and motor development. Before administering an instrument for assessing quality of life, there is a need to consider whether children's cognitive and language development is at the required level (3).

A disorder that an adolescent suffers from may affect autonomy and independence abilities that they gain at this developmental stage. Disorder may extend the length of attachment to parents, and have negative effects on parent-child relationships. Younger children may content themselves with shorter explanations about their health condition; however, adolescents generally need more comprehensive explanations about the causes, mechanisms and treatment of a disorder. Furthermore, they become aware much better than younger children of any condition that their condition may cause death (4).

Adolescence is marked by the desire to gain autonomy and independence, develop closer relationships with the opposite sex, and identify life goals. It is of particular importance that an individual completes these stages of adolescence successfully to develop into a healthy adult. Disorders and treatment may jeopardize the process of adolescence, and cause an adolescent to maintain their attachment to parents, failure to develop good relationships with the opposite sex, and inability define future goals clearly. One of the most significant aspects of assessing quality of life in adolescence is assessing autonomy (3).

It is also important from the perspective of public health to reduce adolescents' complaints about healthcare. Research has shown that there is especially a need for evidence-based studies on adolescent health. A report prepared by an Irish researcher focuses on inequalities among children and adolescents and notes that it is difficult to collect data particularly about mental health, that there is a need to concentrate on plans to overcome this problem and that it is required to cooperate with service providers to develop legitimate projects on a voluntary basis with the involvement of parents (5).

Aim of the Study

It is of particular importance for the well-being of adolescents to determine the sources of social life support, the relationship among family members and its reflections on their lives, and the negative and positive effects of illness and social life on success, and to offer healthcare services that respond to their needs. It is a part of healthcare services to encourage and assist adolescents, as individuals that have not completed their mental and physical development yet, to participate in activities that have the potential to change their body and life style. Instruments designed to assess the quality of life among adolescents have proved to be useful for healthcare professionals. Today, instruments have been developed and used to assess the quality of life of healthy adolescents as well as those under treatment across the world. These instruments have been used in different countries for children of the same age group after being culturally adapted (6-12).

In this study, it was aimed to make a cultural adaptation of the Child Health an Illness Profile-CHIP-AE measurement tool for adolescents, which was developed by Starfield in 1993, to analyze whether the Turkish version is reliable, valid and applicable.

METHODS

The Child Health an Illness Profile- Adolescents (CHIP-AE)

The CHIP-AE measurement tool includes 6 basic dimensions (satisfaction, discomfort, resilience, risks, achievement and impairments) and 20 sub-dimensions of this basic domain. The field of satisfaction defines perceptions of well-being and self-esteem. The area of discomfort describes the different symptoms that hinder the overall feeling of comfort or well-being. The stamina area explains the positive aspects of health. The area of risks describes possible behaviors that threaten health. The field of success tries to reveal to what extent the adolescent meets the performance expectations of society at

school and work. The field of Disorders describes biomedically defined physical and mental disease states. Items are answered on a four-point or five-point Likert-type scale (25). The high score from the measurement tool; determines better satisfaction, success and endurance. Fewer scores reflect less discomfort and risk. In the Turkish version study, the questions about the individual sub-domains of the risk domains (drug use, sexual preference, etc. includes questions) were removed with the recommendation of the ethics committee and the health institution applied by the study.

Type of the Study

This is a cross-sectional and descriptive study, where the aim is to determine the degree of change in the quality of life of adolescents receiving inpatient treatment and to determine any possible health problems by defining general quality of life criteria in adolescents defined as the healthy group.

Research Setting

The study was carried out on adolescents aged 12-17 who received inpatient treatment in a University Hospital, Child Health and Diseases Clinic, Pediatric Surgery Clinic, and Adult Orthopedics Clinic, and students studying at a private school during the spring school term.

Population and Sample

The study was conducted with adolescents aged 12-17 years, hospitalized in a university hospital's pediatric clinic. The participation rate was 79.74%. The number of adolescents aged 7-12 who agreed to participate in the study is 252. The healthy adolescent group consists of students aged 12-17 at a private school.

Inclusion criteria

1- Adolescents should be aged between 12 and 17 years.
2- The adolescent and his / her legal guardian must have given permission and consent to fill out the questionnaire.
3- Lack of situations that prevent answering questions such as visual and hearing impairment.
4- Adolescents do not lack cognitive skills.
5- In the case group, the adolescent should be receiving inpatient treatment.

Exclusion criteria

For both groups:

1- Adolescents that did not have the capacity to answer the questions
2- Adolescents who do not agree to participate in the study
3- Adolescents who do not accept the participation of their legal guardians

Data Collection Measurement Tools and Methods

The "Child Health and Illness Profile- Adolescents (CHIP-AE)", a general quality of life assessment instrument for adolescents developed by Starfield et al. (14), was used for the purpose of this study. Reliability validity was made in 1998 by Riley et al. (15). The instrument consists of 88 questions focusing on five domains and twelve subdomains that affect all aspects of health in children receiving healthcare or who are affected by these systems in school education, i.e. satisfaction, discomfort, resilience (resistance and flexibility), risk avoidance, and achievement. Furthermore, there was a module of disorders based on a classification of disorders.

This instrument was selected for the purpose of this study as its parameters refer to a wide range of domains. It is important that several factors that surround an adolescent are assessed via this instrument. The instrument assesses not only how adolescents are affected by a disorder and health status but also how they are affected by environmental factors. The presence of a disorder module was another factor that motivated us to use this instrument. For the use of the form, necessary permissions have been obtained from the author and the institution. In addition, necessary information was obtained from the same institution in order to evaluate and analyze the data obtained.

Data-Collecting Method

After the cultural adaptation, a preliminary study was carried out with final changes on the form. The data were filled in one-on-one interviews with adolescents. Adolescents who wanted to complete the form on their own were told about how to reply to the questions to make sure that they filled out the form completely and properly.

Cultural compliance, validity and reliability analysis in measurement tools that evaluate the quality of life

The cultural adaptation of an assessment instrument for the quality of life, it is important to produce the closest possible equivalent of the original meaning. Cultural adaptation is not limited to translation. Finding the cultural equivalents of the concepts that define the mother tongue underlies cultural harmony.

The four-stage model created by Hui and Triandis was used for cultural adaptation (16).

1- Conceptual / functional equivalence: This is an indispensable prerequisite.
2- Functional equivalence
3- Substance equivalence
4- Numerical equivalence

It consists of two stages: 1. Translation of measurement tool 2. Evaluation by psychometric tests (17).

Techniques Used in Data Analysis and Evaluation

Pediatric Health and Disease Profile-Internationally accepted steps were followed for the cultural adaptation of CHIP-AE followed by reliability and validity testing (18-21). The Turkish adaptation process:

1- Permission was obtained from the author and institution, the Ethics Committee, the Hospital and the Head of the

Department of Pediatric Health and Diseases respectively. For healthy adolescents, necessary permissions were obtained from the school administration.

2- The English form was translated into Turkish independently by two people.

3- The two translations were combined by a committee of one doctor and experts with a good command of English to form a single form.

4- The combined form was translated back into English by a bilingual translator whose mother tongues are Turkish and English.

5- A Turkish working group compared the translated form with the original English form. Then, a preliminary study was conducted to evaluate the Turkish version from a cognitive-conceptual perspective.

6- The final Turkish version was applied to a selected adolescent group between the ages of 12-17 to evaluate cognitively and conceptually. The preliminary Turkish version of CHIP-AE was obtained after making changes to the Turkish expressions according to each related suggestion.

7- The measuring tool was applied to the group representing adolescents aged 12-17 years.

8- The collected data were analyzed.

9- The measuring tool has been tested for compliance. It was then evaluated using appropriate statistical methods.

Since the data did not show normal distribution, Kruskal-Wallis variance analysis was used in comparisons of more than two groups. Confirmatory Factor Analysis (CFA) was performed for structural equation modeling, which indirectly verifies the validity of items and tools, and LISREL 8.72 software program was used for this (22,23). CFA is often expressed in diagrams using path models in which hypothetical structures are defined as hidden variables.

RESULTS

Participants' sociodemographic characteristics

Table 1 provides the distribution of demographic data of ill and healthy adolescents.

In the present study, the average age of adolescents receiving inpatient treatment (aged 12-17) was 14.32 (1.70), and of healthy adolescents (aged 12-17) was 14.57 (1.51). In the group of adolescents receiving inpatient treatment, 58.7% of participants were female and 41.3% of participants were male. In the healthy group, 48.9% of participants were female and 51.1% of participants were male (Table 1).

The participants were asked to evaluate their satisfaction with their housing conditions. Their replies are provided below. (24 adolescents receiving inpatient treatment did not answer this question.) Healthy adolescents reported higher satisfaction with living conditions than adolescents receiving inpatient treatment (Table 2).

Table 1: The Distribution of Sociodemographic Characteristics of Adolescents (Aged 12-17).

Variables		Adolescents receiving inpatient treatment (N: 252)		Healthy adolescents (N: 223)	
		Number (n)	Percentage (%)	Number (n)	Percentage (%)
Sex	Female	148	58.7	109	48.9
	Male	104	41.3	114	51.1
Educational stage	Doesn't go to school	23	9.1	-	-
	Primary sc. 5th grade	10	4.0	-	-
	Primary sc. 6th grade	34	13.5	21	9.4
	Primary sc. 7th grade	35	13.9	38	17.0
	Primary sc. 8th grade	45	17.9	36	16.1
	High school 9th grade	44	17.5	69	30.9
	High sc. 10th grade	25	9.9	26	11.7
	High sc. 11th grade	22	8.7	33	14.8
	High sc. 12th grade	14	5.6	-	-
Average age		14 .32(1.70)		14.57(1.51)	

Table 2: Participants' satisfaction with housing conditions.

	1	2	3	4	5
	Poor		Mediocre		Good
Inpatients	4 (%1.6)	3 (%1.2)	55 (%21.8)	30 (%11.9)	136 (%54.0)
Healthy adolescents	12 (%5.4)	2 (%0.9)	12 (%5.4)	60 (%26.9)	137 (%61.4)

The disorders module in CHIP-AE form was used to classify the disorders with which inpatients were diagnosed. In the pediatrics department 26 adolescents (10.3%) were suffering from diabetes mellitus; and in the surgical departments, 11 adolescents (4.4%) had a leg or foot fracture, 11 adolescents (4.4%) had juvenile rheumatoid arthritis, and 10 adolescents (4.0%) had a cardiac disease (Table 3).

Table 3: The Distribution of Disorders in the Group of Adolescents Receiving Inpatient Treatment.

Disorder	Number (n)	Percentage (%)
No answer	35	13.8
Acute minor illnesses	25	9.9
Acute major illnesses	40	15.9
Recurrent illnesses	63	25
Long-term medical illnesses	68	26.9
Long-term surgical illnesses	17	6.8
Psychosocial disorders	4	1.6
Total	252	100

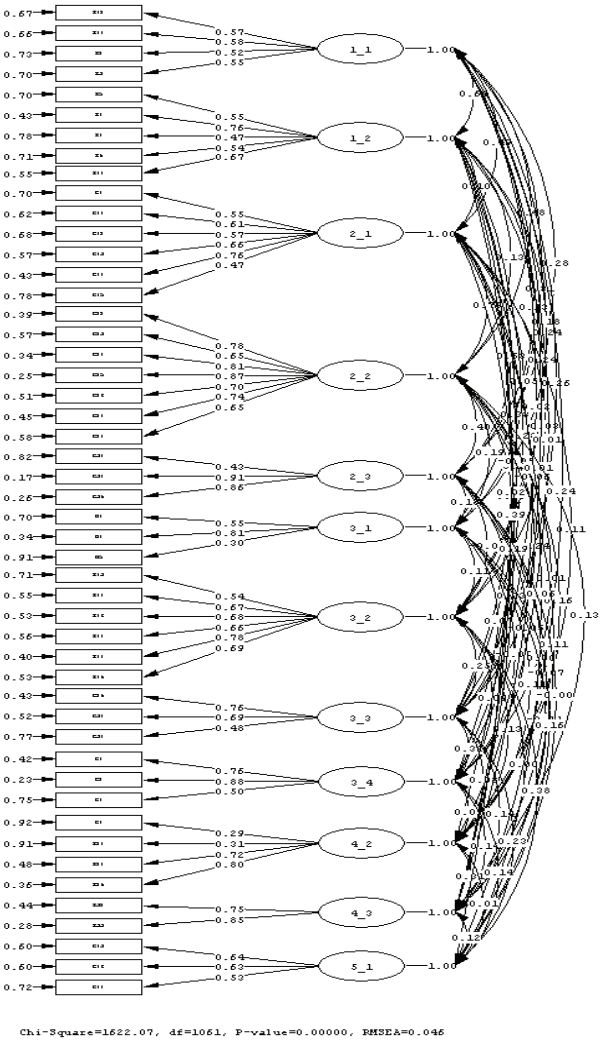

Figure 1: Path Diagram for the Group of Adolescents Receiving Inpatient Treatment.

Some diseases identified for each category are defined as follows. Acute minor illnesses: upper respiratory tract infection, fever, toothache; Acute major diseases: extremity fractures, intoxication, lung infection; Recurrent diseases: DM, RA, thalassemia, asthma, anemia; Long-term medical illnesses: CKD, chronic heart disease, ALL, thyroid disorders; Long-term surgical diseases: severe fractures, multiple injuries; Psychosocial disorders: Suicide, depression, personality disorders, serious anxiety disorders (Table 3).

The participants were also asked whether they wanted to be informed about their health condition. They mentioned that they needed information about any change in health condition, whether they would recover, and the course of disease. The majority of participants did not answer this question, which indicated a sort of reaction and the presence of an undesirable situation about which they did not want to talk.

Reliability and Validity test with Confirmatory Factor Analysis

DFA was done to verify some factors related to construct validity in the original form in the Turkish version. As a result, some items in the original form were removed from the Turkish version of the tool. Data analysis was evaluated after these items were removed from the form (Figures 1-2).

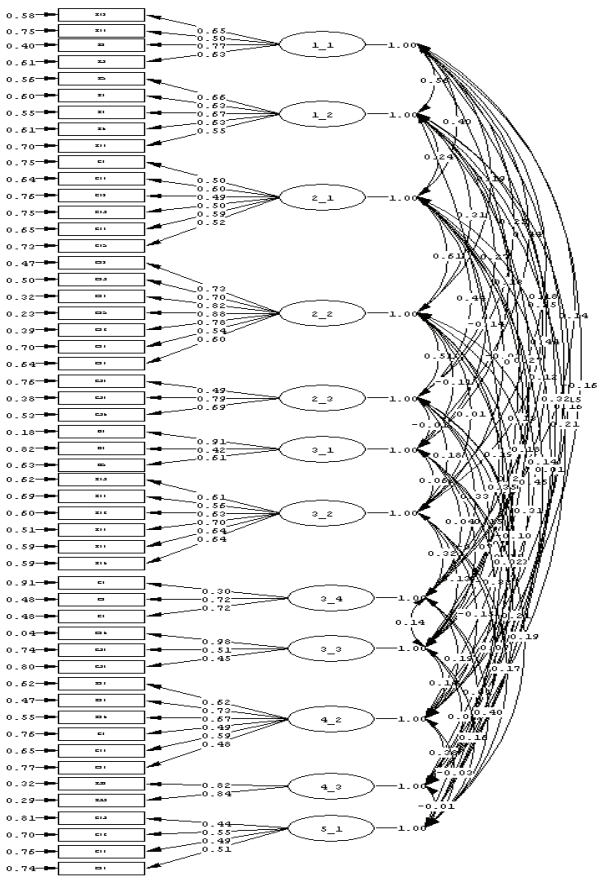

Figure 2: Path Diagram for the Group of Healthy Adolescents.

The fit index of the model obtained from the CFA conducted for **the group of adolescents receiving inpatient treatment** was examined. Chi-square values and fit index values are as follows: x^2= 1622.07 N=252, sd=1061, *p*=.000; Standardized Root Mean Square Residual (SRMR)=0.063, Comparative Fit Index (CFI)=0.93, Non-normed Fit Index (NFI)=0.82, The Root Mean Square Error of Approximation (RMSEA)=0.046, Adjusted Goodness of Fit Index (AGFI)=0.79, Non-normed Fit Index (NNFI)=0.92, Goodness-of-fit Index (GFI)=0.79. Fit index values show that the model has a good fit (Figure 1).

The fit index of the model obtained from the CFA conducted for **the group of healthy adolescents** was examined. Chi-square values and fit index values are as follows: x^2=2082.33, N=223, sd=1208, *p*=.000; NNFI=0.85, RMSEA=0.057, GFI=0.73, NFI=0.75, CFI=0.86, SRMR=0.079, (AGFI)=0.70 (Figure 2).

Item analysis and evaluation of the reliability of the CHIP-AE measurement tool

Item total correlations and Cronbach's Alpha coefficient were calculated to test the reliability of the areas examined in the Confirmatory Factor Analysis. The average scores of the items, total and average scores of the factors, and standard errors were taken into account.

The total and average scores and standard errors of the data collected from the group of adolescents receiving inpatient treatment and the group of healthy adolescents are provided in Table 4.

In the group of adolescents receiving inpatient treatment, the average score for the domain of discomfort was higher in men (4.23); for the domain of achievement, higher in women (2.38); for the domain of risks, higher in women (4.36); for the domain of flexibility, higher in women (2.38); and for the domain of satisfaction, higher in men (2.92). In the group of healthy adolescents, the average score for the domain of discomfort was higher in men (4.28); for the domain of achievement, higher in men (2.46); for the domain of risks, higher in women (4.29); for the domain of flexibility, higher in women (3.34); and for the domain of satisfaction, higher in men (3.24) (Table 4).

Table 4: Average Scores and Standard Deviations for Domains and Subdomains in the Child Health and Illness-CHIP-AE Form.

Domain	Healthy Adolescents			Adolescents Receiving Inpatient Treatment		
	Total n=223	Male n=114	Female n=109	Total n=252	Male n=104	Female n=148
Satisfaction	3.11 (.515)	3.24 (.512)	2.98 (.489)	2.88 (.610)	2.92 (.575)	2.85 (.634)
Health-related	3.03 (.609)	3.26 (.577)	2.80 (.552)	2.72 (.729)	2.87 (.674)	2.61 (.749)
Self-esteem	3.18 (.592)	3.22 (.603)	3.13 (.580)	3.01 (.689)	2.96 (.653)	3.04 (.713)
Discomfort	4.21 (.559)	4.28 (.453)	4.14 (.646)	4.06 (.766)	4.23 (.701)	3.94 (.790)
Physical Discomfort	4.27 (.544)	4.32 (.501)	4.23 (.585)	3.98 (.973)	4.28 (.665)	4.01 (.857)
Emotional Discomfort	4.03 (.805)	4.14 (.709)	3.91 (.882)	4.12 (.793)	4.23 (.816)	3.81 (1.03)
Limited Activity	4.52 (.677)	4.53 (.605)	4.51 (.748)	4.12 (1.04)	4.10 (1.05)	4.13 (1.03)
Flexibility	3.32 (.582)	3.31 (.584)	3.34 (.583)	2.79 (.567)	2.72 (.593)	2.83 (.545)
Physical Activity	2.50 (1.16)	2.82 (1.23)	2.16 (.984)	1.73 (.842)	1.90 (.896)	1.62 (.784)
Coping with Social Problems	3.02 (.633)	2.92 (.719)	3.12 (.512)	2.94 (.786)	2.79 (.827)	3.05 (.739)
Home Security and Health	4.21 (1.20)	4.12 (1.26)	4.31 (1.14)	3.78 (1.41)	3.79 (1.45)	3.78 (1.38)
Family Attitudes	3.80 (1.10)	3.77 (1.09)	3.98 (2.01)	3.46 (1.20)	3.22 (1.25)	3.62 (1.13)
Risks	4.16 (.642)	4.03 (.715)	4.29 (.524)	4.35 (.485)	4.32 (.519)	4.36 (.461)
Individual	This group of questions was excluded.					
Success-threatening	4.38 (.742)	4.23 (.815)	4.52 (.626)	4.66 (.591)	4.65 (.629)	4.67 (.567)
Peer Effects	3.50 (.751)	3.41 (.827)	3.60 (.652)	3.72 (.610)	3.67 (.607)	3.76 (.597)
Achievement	2.42 (.859)	2.46 (.884)	2.38 (.833)	2.33 (.939)	2.26 (.931)	2.38 (.944)
Disorders						
Acute minor illnesses	4.34 (.395)	4.32 (.398)	4.36 (.394)	4.38 (.480)	4.46 (.432)	4.32 (.504)
Acute major illnesses	4.83 (.288)	4.80 (.318)	4.87 (.249)	4.75 (.338)	4.77 (.330)	4.74 (.345)
Recurrent illnesses	3.97 (.337)	3.82 (.435)	3.98 (.327)	4.55 (.449)	4.66 (.374)	4.47 (.480)
Long-term medical illnesses	4.88 (.254)	4.90 (.258)	4.87 (.251)	4.73 (.393)	4.80 (.295)	4.68 (.444)
Long-term surgical illnesses	4.67 (.526)	4.65 (.570)	4.69 (.477)	4.61 (.618)	4.68 (.526)	4.56 (.672)
Psychosocial disorders	4.76 (.523)	4.67 (.634)	4.86 (.352)	4.71 (.578)	4.78 (.492)	4.66 (.629)

The results suggest that health condition and gender are two factors that affect the quality of life. Results of the CHIP-AE form showed that the mean scores for the sub-domains were higher in the healthy adolescent group than in the sick adolescent group. Considering the current and past illness experiences of the patient adolescent group, the difference in scores is considered important.

In the CHIP-AE form, the content, the total scores and the highest score of domains are as follows: The discomfort subscale refers to interference with certain emotional and physical emotions. The highest score is 80 and the higher score indicates less discomfort. Flexibility involves behavior aimed at personal protection after an illness. The highest score is 75 and the higher the score the greater the flexibility. The highest score for the achievement field is 16, the higher the score the higher the achievement. Risks indicate behavior that is expected to increase the likelihood of illness and injury. The highest score is 40 and this and higher scores indicate low risk. Satisfaction refers to perceived health and quality of life. The highest score is 40, the higher the score, the higher the satisfaction.

The results indicate that total scores of both groups for each subdomain of the CHIP-AE form were lower than total scores for all domains of the instrument. Scores of healthy adolescents were higher than those receiving inpatient treatment.

With regard to the domain of risks, the total score of adolescents under treatment were lower than the score of healthy adolescents. This suggests that adolescents receiving inpatient treatment have a higher risk of disease and injury. On the other hand, healthy adolescents' level of risk prevention is higher than the level of the other group.

In the CHIP-AE form, the highest total scores for respective domains are as follows: Acute minor illnesses-50, acute major illnesses-50, recurrent illnesses-55, long-term medical illnesses–30, long-term surgical illnesses-25, and psychosocial illnesses -25.

In the disorders module of the form, the scores of healthy adolescents were lower than the scores of adolescents receiving inpatient treatment for all domains except recurrent

Table 5: Total Scores and Standard Deviations for Domains and Subdomains in the Child Health and Illness-CHIP-AE Form .

Domain	Adolescents Receiving Inpatient Treatment			Healthy Adolescents		
	Total n=252	Male n=104	Female n=148	Total n=223	Male n=114	Female n=109
Satisfaction	25.94 (5.49)	26.32 (5.18)	25.68 (5.71)	28.05 (4.64)	29.16 (4.61)	26.89 (4.40)
Health-related	10.88 (2.91)	11.49 (2.69)	10.45 (2.99)	12.15 (2.43)	13.05 (2.31)	11.21 (2.21)
Self-esteem	15.06 (3.44)	14.83 (3.26)	15.22 (3.56)	15.90 (2.96)	16.11 (3.01)	15.68 (2.90)
Discomfort	65.03 (12.26)	67.68 (11.21)	63.18 (12.6)	67.47 (8.95)	68.57 (7.25)	66.33 (10.35)
Physical Discomfort	24.73 (4.76)	25.68 (3.99)	24.06 (5.14)	25.67 (3.26)	25.94 (3.00)	25.38 (3.51)
Emotional Discomfort	27.92 (6.81)	29.67 (5.71)	26.70 (7.25)	28.22 (5.63)	29.03 (4.96)	27.38 (6.17)
Limited Activity	12.38 (3.13)	12.32 (3.17)	12.41 (3.11)	13.57 (2.03)	13.59 (1.81)	13.55 (2.24)
Flexibility	44.65 (9.07)	43.52 (9.49)	45.45 (8.71)	49.92 (8.74)	49.72 (8.76)	50.13 (8.75)
Physical Activity	5.21 (2.52)	5.71 (2.69)	4.87 (2.35)	7.51 (3.49)	8.47 (3.71)	6.50 (2.95)
Coping with Social Problems	17.69 (4.71)	16.75 (4.96)	18.35 (4.43)	18.13 (3.79)	17.55 (4.31)	18.73 (3.07)
Home Security and Health	11.36 (4.24)	11.38 (4.37)	11.34 (4.16)	12.65 (3.62)	12.37 (3.78)	12.95 (3.42)
Family Attitudes	10.38 (3.60)	9.67 (3.76)	10.88 (3.41)	11.62 (4.83)	11.32 (3.29)	11.94 (6.04)
Risks	26.10 (2.91)	25.97 (3.11)	26.19 (2.76)	33.30 (5.13)	32.26 (5.72)	34.38 (4.19)
Individual	This group of questions was excluded.					
Success-threatening	18.66 (2.36)	18.61 (2.51)	18.69 (2.26)	26.28 (4.45)	25.42 (4.89)	27.17 (3.76)
Peer Effects	7.44 (1.22)	7.35 (1.21)	7.50 (1.22)	7.01 (1.50)	6.83 (1.65)	7.21 (1.30)
Achievement	7.01 (2.81)	6.79 (2.79)	7.16 (2.83)	9.69 (3.43)	9.85 (3.53)	9.52 (3.33)
Disorders						
Acute minor illnesses	43.46 (3.95)	43.29 (3.98)	43.63 (3.94)	43.80 (4.80)	44.66 (4.32)	43.20 (5.04)
Acute major illnesses	38.70 (2.30)	38.42 (2.54)	39.00 (1.99)	38.06 (2.71)	38.19 (2.64)	37.97 (2.76)
Recurrent illnesses	43.72 (3.70)	42.12 (4.79)	43.85 (3.60)	50.12 (4.88)	51.59 (4.75)	49.82 (4.86)
Long-term medical illnesses	29.32 (1.52)	29.40 (1.54)	29.24 (1.51)	28.39 (2.36)	28.80 (1.77)	28.10 (2.66)
Long-term surgical illnesses	23.37 (2.63)	23.28 (2.85)	23.47 (2.38)	23.06 (3.09)	23.40 (2.63)	22.82 (3.36)
Psychosocial disorders	19.07 (2.09)	18.71 (2.53)	19.44 (1.41)	18.86 (2.31)	19.15 (1.96)	18.66 (2.51)

Table 6: Cronbach's Alpha Results for the Reliability Analysis of Domains in the Child Health and Illness-CHIP-AE.

	Healthy Adolescents	Adolescents Receiving Inpatient Treatment
Domain	N: 223	N: 252
Satisfaction	.80	.77
Health-related	.71	.64
Self-esteem	.75	.72
Discomfort	.87	.89
Physical Discomfort	.69	.77
Emotional Discomfort	.88	.89
Limited Activity	.63	.76
Flexibility	.56	.71
Physical Activity	.67	.53
Coping with Social Problems	.79	.82
Home Security and Health	.65	.66
Family Attitudes	.40	.74
Risks	.76	.61
Individual	This group of questions was excluded.	
Success-threatening	.75	.58
Peer Effects	.81	.67
Achievement	.54	.60
Total	**.80**	**.85**
Disorders		
Acute minor illnesses	.72	.71
Acute major illnesses	.80	.72
Recurrent illnesses	.72	.71
Long-term medical illnesses	.77	.73
Long-term surgical illnesses	.80	.72
Psychosocial disorders	.76	.71
Total	**.75**	**.79**

diseases. The total scores for all domains, except recurrent illnesses, were close to each other in the two groups of adolescents.

With regard to recurrent illnesses, the higher score in healthy adolescents suggests that this group has already suffered or was more likely to suffer from this category of diseases. The results of the CHIP-AE form show that the mean scores are higher for sub-domains higher in the healthy adolescents group than the inpatient group. Considering the current and past illness experience of the adolescent group under treatment, the difference in scores is considered to be significant (Table 5).

When all items are evaluated in the validity and reliability analysis of the CHIP-AE form; Cronbach's Alpha was 0.85 in the inpatient group and 0.80 in the healthy adolescent group. In the disorders module of the form, the Cronbach's Alpha was 0.75 in the group of adolescents receiving inpatient treatment and 0.79 in the group of healthy adolescents (Table 6).

DISCUSSION

When the studies using the CHIP-AE form were evaluated, it was found that the studies were generally carried out with children aged 11-20 years. The original form was prepared for the 12-17 age group. It has been observed that wider age groups such as 11-20 were included in various translations into other languages and many other studies conducted.

When the effect and sub-domains are evaluated by comparing the mean scores in the Patient and Control Groups, it was found that some questions were removed or excluded from the evaluation in direct proportion to the purpose of the study. Differences and compatibilities are observed in total scores and averages accordingly.

The Spanish and the US versions (2007) of studies were evaluated similarly to our research findings in the domains of Satisfaction, Discomfort and Risks. It was determined that

higher scores were obtained from other studies conducted in the Flexibility sub-domains, Physical activity and household health and Environment (13,14).

In the study conducted by Altshuler et al. with 63 adolescents who stayed in institutions in 2002, a high level of satisfaction was found in the physical health, well-being, and social problem-solving skills, and academic success of the youth. Self-esteem, sentimental and psychosocial disturbance, family participation and occupational performance were found to be at low levels. It was also determined that the adolescents tend to take more risks for academic success, and they were also vulnerable to threats arising from their peer's influences (7).

In the study conducted by Serra-Sutton et al. in 2003, the Spanish version of CHIP-AE was used on adolescents between 12-19 years. In the study reaching 902 individuals, the distribution of the CHIP-AE scores was generally observed to be positive. The score distribution of Barcelona reference samples is similar to the original results of Baltimore (USA) with only some differences on the basis of individual risks (26).

In a study conducted by Arlene C. Gerson et al in 2005, 113 patients with Chronic Renal Failure (CRF) between the ages of 10 and 18 and 226 healthy children in the same provinces as a control group in a total of 7 pediatric nephrology centers in tertiary hospitals in several provinces in the Northeast USA were evaluated. They found that the health and activity restraints of children in the patient group were high and their general satisfaction perception was low (8). In the study where psychometric properties of CHIP-AE were evaluated comprehensively, it has been found that the CHIP-AE is a valid and highly reliable tool for adolescents in both healthy and patient populations. Significant differences between CHIP-AE scores of CRF patients and the school-based paired control group were observed in the domains included in the disease module. Compared with the control group, it was found that the health satisfaction of patients with renal failure was low. It was determined that the domain of Flexibility requiring more attention from the household and its surroundings and decreasing the likelihood of harm in CRF patients, received higher scores than the Home-based Safety and Health Practices sub-domain control group. In addition, in all of the CHIP-AE Risks effect and Risks sub-domains, a significant difference was found between the CRF patient and control group. These findings reveal the fact that kidney patients are faced with less risky behaviors, while adolescents in the control group indicate practicing more risky behaviors (smoking, alcohol, etc.). It was determined that adolescents with CRF faced less destructive behaviors for social and academic success than the control group adolescents (27).

In the study conducted by Hack M. et al. in 2007, where low birth weight (<1.5 kg) babies were evaluated in terms of their health and perception levels when they reached adolescence, a sampling of 241 people was reached. 232 adolescents with normal birth weight were evaluated as a control group. It was observed that the satisfaction and comfort impacts of low birth weight differ from those of normal birth weights. Even though the flexibility domain was found to be in a lower level, no effective results were found in the sub-domains of physical activity and family participation (28).

In a study conducted by Alonso J. et al. aiming to update the Spanish version of CHIP-AE in 2008, 1453 Spanish adolescents formed the sampling group. It was found in the results that 3.4% of adolescents had a good health profile whereas 11.2% of them had a bad health profile (6).

In the study conducted by Małkowska-Szkutnik A. et al. with 1177 students from different types of secondary and high schools in a province in Poland in the 2010-2011 academic year, aiming to determine self-esteem between healthy adolescents and adolescents with diabetes mellitus (DM), 117 patients with DM and 1060 healthy adolescents were included. Self-esteem of healthy adolescents was found to be higher than that of their DM patient peers, and it was determined that the most important factors that constitute self-esteem of adolescents with DM were physical activity, academic achievement, social support and self-esteem (29).

The CHIP-AE form was used in the study with the aim of defining the health profiles of the Adolescents in the orphanage. Health satisfaction, risks, flexibility, and discomfort effects were found to be at a worse level in children staying in orphanages. 39% of the children participating in the study rated their health level as good, while 30.6% of them rated their health level as poor or bad. In particular, girls were found to have profiles that may result in high-risk behavior, aggression, sexual abuse or suicide (30).

Our study resulted in the Adolescent Patient group data being similar to the Spanish version (2003) in the satisfaction domain, resulting in a lower value than the research conducted by Maureen (2007) using the USA version, and lower than the results of both versions in the Discomfort, Resilience and Achievement domains. When the Adolescent Patient group participating in our study was evaluated based on the above-mentioned research findings as per the Risks domain scores, it had a low probability of disease or injury.

CHIP-AE is one of the general health quality of life measurement tools adapted and approved in the Turkish adolescent population. This study shows that the new Turkish version of CHIP-AE has acceptable conceptual equivalence with the original US vehicle. It shows that it achieves similar reliability and pre-validity by using the known group approach with the original instrument, thus providing preliminary proof of the general equivalence of the Turkish version. The adapted version has been found to have good psychometric properties. In this case, adolescent health and health care in Turkey shows can be used to assess the needs. However, some aspects of the structural validity of the measuring instrument must be studied in a larger sample group in Turkey and structured to confirm the ability to distinguish certain disease groups. The results of this study also show that the six domains and most of the subdomains of the CHIP-AE measurement tool reached acceptable levels of internal consistency reliability.

Table 7: Comparison of Reliability and Validity Testing of CHIP-AE Forms in the Literature with the Turkish Version.

	USA Version Starfield et al. Healthy Adolescents 1993 (14)			USA Version Starfield et al. Inpatients 1993 (14)	USA Version Starfield et al. N: 3451 Healthy Adolescents 1995 (13)				Spanish Version N: 417 Rajmil L. 2003 (24-25)	Turkish Version Healthy Adolescents N: 223	Turkish Version Adolescents Receiving Inpatient Treatment N: 252
	North Baltimore	Western Maryland	Arkansas		East Baltimore	North Baltimore	Western Maryland	Arkansas			
Satisfaction	-	-	-	**0.89**	-	-	-	-	**0.88**	**0.80**	**0.78**
Health-related	0.79	0.85	0.74	0.79	0.80	0.79	0.87	0.80	0.80	0.71	0.65
Self-esteem	0.81	0.87	0.72	0.81	0.80	0.81	0.81	0.68	0.78	0.76	0.72
Discomfort	-	-	-	**0.89**	-	-	-	-	**0.92**	**0.87**	**0.90**
Physical Discomfort	0.80	0.85	0.83	0.80	0.86	0.82	0.88	0.87	0.82	0.69	0.77
Emotional Discomfort	0.79	0.84	0.72	0.79	0.92	0.86	0.93	0.89	0.83	0.89	0.90
Limited Activity	0.71	0.73	0.77	0.71	0.62	0.74	0.66	0.70	0.65	0.63	0.76
Flexibility	-	-	-	-					-	**0.56**	**0.71**
Physical Activity	0.62	0.66	0.47	-	0.74	0.62	0.77	0.76	-	0.67	0.53
Coping with Social Problems	0.78	0.81	0.83	0.78	0.76	0.78	0.80	0.82	0.75	0.80	0.83
Home Security and Health	0.33	0.45	0.05	-	0.40	0.42	0.56	0.42	-	0.66	0.67
Family Involvement	0.77	0.84	0.76	0.77	0.83	0.85	0.81	0.78	0.78	0.40	0.74
Risks	-	-	-	**0.90**	-	-	-	-	**0.92**	**0.77**	**0.62**
Individual	0.77	0.87	0.77	0.77	0.79	0.70	0.84	0.77	0.75	0.76	0.59
Success-threatening	0.83	0.83	0.83	0.83	0.86	0.84	0.89	0.86	0.76	0.82	0.67
Peer Effects	0.73	0.83	0.72	0.73	-	0.73	-	-	0.82	-	-
Achievement	-	-	-	**0.74**	-	-			-	**0.54**	**0.60**
Professional	0.42	0.76	0.31	0.79	-	-	0.72	0.78	-	-	-
Academic	0.63	0.65	0.58	0.89	-	-	0.67	0.53	-	-	-
Disorders	-	-	-	**0.87**	-	-	-	-	-	-	-
Acute minor illnesses	0.55	0.57	0.52	0.64	-	-	-	-	-	0.73	0.71
Acute major illnesses	0.36	0.37	0.57	.083	-	-	-	-	-	0.81	0.72
Recurrent illnesses	0.49	0.58	0.63	0.73	-	-	-	-	-	0.73	0.72
Long-term medical illnesses	0.33	0.39	0.38	0.95	-	-	-	-	-	0.77	0.73
Long-term surgical illnesses	0.51	0.54	0.54	0.87	-	-	-	-	-	0.80	0.72
Psychosocial disorders	0.16	0.38	0.46	0.93	-	-	-	-	-	0.76	0.71

The adaptation process ensured that most translation related problems were resolved satisfactorily (31). More importantly, the results of internal consistency are similar to those obtained with the US version of CHIP-AE.

Table 8 below provides a comparison of validity results of the original CHIP-AE form (13), various translated versions of the form, and the Turkish version. In general terms, CHIP-AE is an original form designed specifically to measure the general health condition of adolescents. It is an instrument with high validity, solid theoretical framework and experimental basis. CHIP-AE may be a useful instrument for the assessment of social and healthcare service programs. The results may be used in health resources planning.

Findings of the present study were compared with results reported in the literature. The most significant difference is that questions related to the subdomain of individual risks did not produce any significant results in this study. After this was confirmed by CFA, these items were removed from the Turkish version of the instrument. Subdomains in the Turkish version are analogous to the US and Spanish versions (13,15,24,25). The scores related to the risks domain were lower compared to the scores in the US and Spanish versions. No scores were given for the subdomain of peer effects.

The disorders module in the original US version of CHIP-AE form was used only by Starfield et al. in 1993 (14). Reliability and validity testing was not conducted for this module in subsequent studies. In the present study, the reliability of the disorders module was higher than that of the US version (Table 7).

CONCLUSION

According to all fields and all item analyzes, Cronbach's Alpha levels are high. These results show that the CHIP-AE version, adapted to Turkish children, can be used for both sick adolescents and healthy adolescents. Confirmatory factor analysis shows that the items and (sub) domains obtained as a result of analyses have a statistically acceptable distribution.

The Turkish version of the CHIP-AE form can be used in counseling centers for healthy adolescents and by a professional healthcare team for adolescents receiving treatment to support treatment processes in different disease groups. It will be useful to repeat the results in a larger sample group.

The main limitation of the study is that it was conducted in a single health center. In the sample group of the study, inpatients were selected for the patient group adolescents during the three-month study period and only one school was selected for the control group. The Sample group is not representative of the child population in Turkey. It is recommended that this validated instrument is not tested in a larger sample group.

Ethics Committee Approval: This study was approved by Eskisehir Osmangazi University Ethics Committee.

Informed Consent: Written consent was obtained from the participants.

Peer Review: Externally peer-reviewed.

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REFERENCES

1. WHOQOL G. The World Health Organization Quality of Life assessment (WHOQOL): position paper from the World Health Organization. Special Issue on Health-Related Quality of Life: what is it and how should we measure it?. Social Science and Medicine 1995;41:1403–9.
2. Demirsoy N, Sayligil O. Validity and reliability of a quality-of-life assessment instrument in children aged between 6 and 11 years. Ann Saudi Med 2016;36(4):269-281. https://doi.org/10.5144/0256-4947.2016.269.
3. Eser E, Yüksel H, Baydur H, Erhart M, Saatli G. The psychometric properties of the new turkish generic health-related quality of life questionnaire for children (Kid-KINDL). Türk Psikiyatri Dergisi 2008;19(4):409-17.
4. Casas F. Children's rights and children's quality of life: conceptual and practical issues. Social Indicators Research 1997;42:283–98.
5. Ravens-Sieberer U, Gosch A, Rajmil L, Erhart M, Bruil J, Duer W, et al. The European KIDSCREEN Group, 2005, KIDSCREEN–52 quality-of-life measure for children and adolescents. Expert Review of Pharmaco economics and Outcomes Research 2005;5(3):353–64. https://doi.org/10.1586/14737167.5.3.353.
6. Alonso J, Urzola D, Serra-Sutton V, Tebé C, Starfield B, Riley AW, Rajmil L. Validity of the health profile-types of the Spanish child health and illness profile-adolescent edition (CHIP-AE). Value in Health 2008; 11(3):440-49. https://doi.org/10.1111/j.1524-4733.2007.00290.x.
7. Altshuler SJ, Poertner J. The child health and illness profile-adolescent edition: assessing well-being in group homes or institutions. Child Welfaren 2002;81(3):495–513. https://doi.org/0009-4021/2002/030495-20.
8. Bradford JY, O'Sullivan PS. The relationship between the use of health clinics in rural Mississippi schools and the CHIP-AE adolescent health profile. J Sch Nurs 2007;23(5):293–8. https://doi.org/10.1177/10598405070230050801.

9. Chen SP, Chen EH. Application of modified CHIP-AE in a vocational high school. ABNF J 1999;10(5):104-10.
10. Clarke S, Eiser C. The measurement of health-related quality of life (QOL) in paediatric clinical trials: a systematic review. Health and Quality of Life Outcomes 2004;2(66):1-5. https://doi.org/10.1186/1477-7525-2-66.
11. Forrest CB, Starfield B, Riley AW, Kang M. The Impact of asthma on the health status of adolescents christopher. Pediatrics 1997;99(2):1-7. https://doi.org/10.1542/peds.99.2.e1.
12. Keenaghan C, Kilroe J. A Study on the Quality of Life Tool KIDSCREEN for children and adolescents in Ireland Results of the KIDSCREEN National Survey 2005.Dublin: Published by The Stationery Office; 2008.p6-10.
13. Starfield B, Riley AW, Green BF, Ensminger ME, Ryan SA, Kelleher K, et al. The adolescent child health and illness profile. A population-based measure of health. Med Care 1995;33(5):553–66. https://doi.org/10.1097/00005650-199505000-00008.
14. Rajmil L, Serra-Sutton V, Alonso J, Herdman M, Riley AW, Starfield B. Validity of the Spanish version of the Child Health and Illness Profile (CHIP-AE). Med Care 2003;41:1153–63. https://doi.org/10.1097/01.MLR.0000088460.42155.65.
15. Starfield B, Ensminger M, Riley A, McGauhey P, Skinner A, Kim S. et al. Adolescent health status measurement: development of the child health and illness profile. Pediatrics 1993;91:430-35.
16. Riley A, Forrest C, Starfield B, Green B, Kang M, Ensminger M. Reliability and validity of the adolescent health profile-types. Med Care 1998;36:1237–48. https://doi.org/10.1097/00005650-199808000-00011.
17. Beaton D, Bombardier C, Guillemin F, Ferraz MB. Recommendations for the cross-cultural adaptation of the dash & quickdash outcome measures. Institute for Work & Health 2007;3-10.
18. Bullinger M, Ravens-Sieberer U. General principles, methods and areas of application of quality of life research in children. Praxis der Kinderpsychologie und Kinderpsychiatrie 1995;44(10):391-99. https://doi.org/10.1023/a:1008853819715.
19. Guillemin F, Bombardier C, Beaton D. Cross-cultural adaptation of health related quality of life measures:Literature review and proposed guidelines. C Clin Epidemiol 1993;46(12):1417-32. https://doi.org/10.1016/0895-4356(93)90142-n.
20. Landgraf JM, Maunsell E, Speechley KN, Bullinger M, Campbell S, Abetz L. et al. Canadian-French, German and UK versions of the child health questionnaire: Methodology and preliminary item scaling results. Qual Life Res 1998;7(5):433-45.
21. Raat H, Botterweck AM, Landgraf JM, Hoogeveen WC, Essink-Bot ML. Reliability and validity of the short form of the child health questionnaire for parents (CHQ-PF28) in large random school based and general population samples. J Epidemiol Community Health 2005;59(1):75-82. https://doi.org/10.1136/jech.2003.012914.
22. Ware JE, Harris WJ, Gandek B. MAP-R for Windows: Multitrait/Multi-item Analysis Program-Revised User's Guide. Children's Rights and Children's Health Journal of Social Philosophy 1997;39(4):583-605.
23. Sümer N. Structural equation model: basic concepts and cases. Türk Psikoloji Yazıları 2000;3(6):49-74.
24. Sencan, H. Reliability and validity in social and behavioral measurements. Ankara; Seckin Publications; 2005.p.686-88.
25. Rajmil L, Serra-Sutton V, Alonso J, Starfield B, Riley AW, Vazquez JR. The research group of the Spanish CHIP-AE the Spanish version of the Child Health and Illness Profile (CHIP-AE). Qual Life Res 2003;12:303–313. https://doi.org/10.1023/A:1023220912211.
26. Serra-Sutton V, Rajmil L, Alonso J, Riley A, Starfield B.Reference population values for the Spanish Child Health and Illness Profile-Adolescent Edition (CHIP-AE) using a representative school-based sample. Gac Sanit 2003;17(3):181-9. https://doi.org/10.1016/s0213-9111(03)71726-9.
27. Gerson AC, Riley A, Fivush BA, Pham N, Fiorenza J, Robertson J, et al. Assessing health status and health care utilization in adolescents with chronic kidney disease. J Am Soc Nephrol 2005;16:1427-32. https://doi.org/10.1681/ASN.2004040258.
28. Hack M, Cartar L, Schluchter M, Klein N, Forrest CB. Self-Perceived health, functioning and well-being of very low birth weight ınfants at age 20 years. J Pediatr 2007;151(6):635-41. https://doi.org/10.1016/j.jpeds.2007.04.063.
29. Małkowska-Szkutnik A, Gajewski J, Mazur J, Gajewska K. Self-esteem predictors in adolescents with diabetes. Med Wieku Rozwoj 2012;16(1):35-46.
30. Klosky JL, Howell CR, Li Z, Foster RH, Mertens AC, Robison LL, et al. Risky health behavior among adolescents in the childhood cancer survivor study cohort. J Pediatr Psychol 2012;37(6):634-46. https://doi.org/10.1093/jpepsy/jss046.
31. Bullinger M, Alonso J, Apolone G, Leplège A, Sullivan M, Wood-Dauphinee S, et al. Translating health status questionnaires and evaluating their quality: The IQOLA project approach. International Quality of Life Assessment. J Clin Epidemiol 1998;51:913–23. https://doi.org/10.1016/s0895-4356(98)00082-1.