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Validity and Reliability of the Turkish Version of the Adolescent Sexual and Reproductive Competency Assessment Tool for Healthcare Providers

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ABSTRACT

Objective: This study aimed to test the validity and reliability of the Adolescent Sexual and Reproductive Competence Assessment Tool for Healthcare Providers and to adapt it cross-culturally into Turkish. **Material and Methods:** This study employed a methodological approach, which involved interviewing 402 nurses and doctors working in two state hospitals between August and December 2023. Data were collected using the “Descriptive Characteristics Form” and the “Adolescent Sexual and Reproductive Competence Assessment Tool for Healthcare Providers”. The analysis and evaluation included factor analysis, Cronbach’s alpha analysis, item-total score correlation analysis, content validity, construct validity, and concurrent validity. **Results:** Adolescent Sexual and Reproductive Competence Assessment Tool for Healthcare Providers demonstrated high reliability, as indicated by item-total correlation values that ranged from 0.491 to 0.789. The tool exhibited a four-factor structure, explaining 64% of the total variance in the measured variables. **Conclusion:** The Turkish version of the Adolescent Sexual and Reproductive Competence Assessment Tool for Health Care Providers demonstrated high validity and reliability in the Turkish population.

Keywords: Adolescent, Cross-cultural Translation, Healthcare, Reproductive Health, Sexual Health.

Sağlık Bakım Sağlayıcılar için Adölesan Cinsel ve Üreme Yetkinliğini Değerlendirme Aracının Türkçe Versiyonunun Geçerlik ve Güvenirliği

ÖZ

Amaç: Bu çalışmanın amacı Sağlık Bakım Sağlayıcılar için Adölesan Cinsel ve Üreme Yetkinliğini Değerlendirme Aracı'nın geçerlik ve güvenirliliğini test etmek ve kültürlerarası olarak Türkçe'ye uyarlamaktır. **Gereç ve Yöntem:** Bu çalışmada, Ağustos-Aralık 2023 tarihleri arasında iki devlet hastanesinde çalışan 402 hemşire ve doktorla görüşmeyi içeren metodolojik yaklaşım kullanılmıştır. Veriler “Tanımlayıcı Özellikler Formu” ve “Sağlık Bakım Sağlayıcılar İçin Adölesan Cinsel ve Üreme Yetkinliğini Değerlendirme Aracı” kullanılarak toplanmıştır. Analiz ve değerlendirme, faktör analizini, Cronbach’s alfa analizini, madde-toplam puan korelasyon analizini, içerik geçerliliğini, yapı geçerliliğini ve eşzamanlı geçerliği içermiştir. **Bulgular:** Sağlık Bakım Sağlayıcılar İçin Adölesan Cinsel ve Üreme Yetkinliğini Değerlendirme Aracı 0.491 ile 0.789 arasında değişen madde-toplam korelasyon değerlerinin gösterdiği gibi yüksek güvenilirlik göstermiştir. Bu araç ölçülen değişkenlerdeki toplam varyansın %64’ünü açıklayan dört faktörlü bir yapı sergilemiştir. **Sonuç:** Sağlık Bakım Sağlayıcıları İçin Adölesan Cinsel ve Üreme Yetkinliğini Değerlendirme Aracı'nın Türkçe versiyonu Türk toplumunda yüksek geçerlik ve güvenirlilik göstermiştir.

Anahtar Kelimeler: Adölesan, Kültürlerarası Çeviri, Sağlık Bakımı, Üreme Sağlığı, Cinsel Sağlık.

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INTRODUCTION

The transition from childhood to adulthood, as defined by the WHO, is referred to as adolescence, spanning ages 10 to 19 (WHO, 2023). The global adolescent population is rising, constituting one-sixth of the world's population with a significant majority residing in countries with lower and middle incomes (Azzopardi et al., 2019).

Adolescence is marked by numerous physical, social, and cognitive changes (Kågesten & van Reeuwijk, 2021). Despite being a generally healthy phase of life, it is also characterized by a substantial occurrence of illnesses, injuries, and deaths (Chandra-Mouli et al., 2019). Critical health issues during adolescence include low physical activity, inadequate nutrition, traffic accidents, suicide, alcohol use, interpersonal violence, sexual abuse, and unsafe sex (Azzopardi et al., 2019). Risk behaviours such as early sexual debut, having more than one sexual partner, unplanned sexual intercourse and inconsistent contraceptive use can be seen in both girls and boys during adolescence. In a study, it was reported that a significant proportion of young boy engaged in worrying sexual behaviours such as having sexual intercourse at an earlier age and having more sexual partners than girls adolescents (Eaton et al., 2012; Grubb et al., 2020). Adolescent girls, in particular, are disproportionately affected by partner violence, with unsafe abortions and pregnancy complications being the leading causes of death among them (Chandra-Mouli et al., 2019). Many of the deaths and illnesses during adolescence are preventable or treatable. However, restrictive laws and policies, limited privacy, and healthcare providers' biases can hinder adolescents' access to the care they need (Karim et al., 2023; WHO, 2023). Adolescent sexual and reproductive health (ASRH) issues worsen due to a lack of information and limited access to available services (Thongmixay et al., 2019).

Comprehensive sexual health education can reduce risky sexual behaviors (Pavelová et al., 2021; Weiss et al., 2018). Therefore, gaining accurate information about ASRH and access to services becomes crucial. Providers of ASRH services need to be trained with specialized skills (Thongmixay et al., 2019). There are few studies in the existing literature that focus on addressing ASRH issues (Aslan, 2020; Ünal Toprak & Turan, 2021). Turkish society, due to socio-cultural factors, sexuality is still perceived as taboo despite varying levels of education and cultural backgrounds. It is crucial for healthcare providers, particularly doctors and nurses who constitute a significant structure, to provide a holistic approach without allowing their cultural and moral values to influence their professional practices.

Given the potential societal variations in behaviors and attitudes about ASRH problems, each community needs to possess a suitable, valid, and reliable measurement tool. The instrument developed by Karim et al. (2023) to assess knowledge, attitudes, and behaviors related to ASRH issues in adolescents is

valid and reliable among doctors and nurses (Karim et al., 2023). However, in Turkey, there is a lack of information on the validity and reliability of the scale measuring nurses' and doctors' knowledge, attitudes, and behaviors regarding ASRH issues in adolescents. This study aimed to test the validity and reliability of the Adolescent Sexual and Reproductive Competence Assessment Tool for Healthcare Providers and to adapt it cross-culturally into Turkish. In line with this general objective, the research questions are: (1) Is the Turkish version of ASRH-CAT a valid tool? (2) Is the Turkish version of ASRH-CAT a reliable tool?

MATERIALS AND METHODS

Participants

When performing validity and reliability studies, it is recommended to ensure that the sample size is 5-10 times larger than the number of items in the relevant scale (Anthoine et al., 2014). As the initial scale comprises 40 items, we enlisted 402 healthcare providers, including both nurses and doctors, employed at two state hospitals from August to December 2023. Inclusion criteria encompassed individuals (1) practicing as nurses or doctors, (2) serving in family health centers, obstetrics, gynecology, or pediatric services, and (3) expressing willingness to partake in the research.

Data collection

Data were collected between August and December 2023. Data collection and informed consent forms were transferred to Google Forms. The survey link for the data collection form, created using the Google Forms application, was shared with nurses and doctors via social media channels. The nurses and doctors who agreed to participate in the study gave their consent. Data were gathered through the utilization of the "Descriptive Characteristics Form" and "Adolescent Sexual and Reproductive Competency Assessment Tool for Healthcare Providers".

Data collection tools

Descriptive Characteristics Form: This form contains information about participants' gender, education level, profession, age, and work experience

The Adolescent Sexual and Reproductive Competency Assessment Tool (ASRH-CAT) for Healthcare Providers: Karim et al. (2023) developed this tool designed for nurses and doctors in primary healthcare institutions, requiring specific competency skills to address sexual and reproductive health issues during adolescence. The instrument consists of 40 items and has four subscales. The evaluation employs a five-point Likert scale. During the preliminary inquiry, the instrument exhibited positive item-total correlation and internal consistency, with Cronbach's alpha values (α) ranging from 0.905 to 0.949 (Karim et al., 2023).

Cross-cultural adaptation

We adhered to a manual designed for the cross-cultural adaptation process of self-report scales. As per the guidelines, the procedure encompassed translation,

synthesis of translations, back-translation, soliciting expert opinions, evaluating the pre-final version, and making necessary adaptations.

Translation

The initial phase of the adaptation process was translation. Initially, two bilingual translators, with Turkish as their native language, independently translated the English version of the scale to create a unified version (Beaton et al., 2000). Each translator documented their translation process in a written report. The researchers later met to integrate the findings of the translations. Two translators, having no prior exposure to the original version, separately prior exposure to the original version, separately retranslated the questionnaire to the original language in the next phase. Two native English speakers performed back-translations. Neither translator was familiar with the concepts being investigated. After reaching a consensus, a draft scale was created.

Expert opinion

Feedback was obtained from nine experts with expertise in pediatrics, pediatric nursing, and child development to evaluate the scope validity of the Turkish version of the scale. These professionals were responsible for evaluating the scale items using the Lawshe content validity ratio and index were utilized to determine content validity at the item level (Lawshe, 1975).

Pilot application

The last phase of the adaptation investigation included a pilot application. In order to evaluate the comprehensibility of the Turkish version, a pilot study was conducted with the participation of 20 nurses and doctors who were not included in the sample. Each participant filled out the form, and interviews were conducted to understand the meaning of each item and selected response.

Analysis

The data underwent testing for reliability and validity through the IBM SPSS Version 22.0 software. Descriptive statistics, including frequencies, percentages, arithmetic mean, and median, were employed. Scope validity ratios and values were scrutinized to establish scope validity. For scale validity analyses and sample size determination, Bartlett's test of sphericity and Kaiser-Mayer-Olkin (KMO) tests were applied to assess the adequacy of the dataset. Exploratory factor analysis (EFA) utilized Principal Component Analysis (PCA), and the validity of the resulting structure was affirmed through confirmatory factor analysis (CFA). Internal consistency was gauged using α coefficient. The Pearson correlation test examined the relationship between measurements in the test-retest of the scale. Results were considered statistically significant at a 95% confidence interval, $p < 0.05$.

Ethics

Permission and documents (from Rosnah Sutan) were obtained via email to conduct the original scale's Turkish validity and reliability study. Ethical approval

was granted by the ethics committee (Protocol No: 2023-SBB-0401, Decision Date: 12.07.2023, Decision No: 14). There is an informed consent form that must be read and approved by the nurse and doctor before the data collection form can be viewed. The online data collection form was completed by the nurse and doctor who filled out the informed consent form and voluntarily agreed to participate in this study. In order to ensure data security in the study, all electronic documents were saved on locked computers and were only accessible by the researchers.

RESULTS

Demographics

Of the participants 79.9% were female and the majority (66.4%) were university graduates. Most of the participants (68.9%) were nurses and the mean age was 32.82 ± 6.98 years (22-61). The mean work experience was 8.33 ± 6.85 years (1-41) (Table 1).

Content validity

The scale was presented to nine experts for content validity. Based on expert evaluations, the content validity ratios of the items were analyzed. Five items with content validity ratios below 0.75 were excluded at this stage. While the content validity ratios of the remaining items ranged from 0.75 to 1.0, the scale's content validity index was 0.91.

Table 1. Demographic characteristics of the participants (n=402).

Characteristics	n	%
Gender		
Female	321	79.9
Male	81	20.1
Education level		
High school	6	1.5
University	267	66.4
Degree	93	23.1
Doctorate	36	8.4
Profession		
Nurse	277	68.9
Doctor	125	31.1
Age (years)		
Mean \pm SD		32.82 ± 6.98
Min- Max		22-61
Work experience		
Mean \pm SD		8.33 ± 6.85
Min- Max		1-41

SD:Standart deviation, **Min-Max**:Minimum-Maximum, **n**:number of sample, %:percent.

Construct validity

In the scale's construct validity, seven items with factor loadings below 0.40 and cross-loading values were excluded at this stage, resulting in a final scale of 28 items. The scale's Kaiser-Meyer-Olkin (KMO) value was found to be 0.764. The χ^2 value in the Bartlett sphericity test was 743.100 and was statistically significant ($p < 0.001$). The scale exhibited a four-factor structure with eigenvalues greater than one for each factor, explaining 64% of the total variance in the measured variables (Figure 1, Table 2).

Table 2. Results of explanatory factor analysis (n=402).

Items	Factors				Kaiser–Meyer–Olkin measure	Bartlett’s test of sphericity	Eigenvalue	Explained variance
	1	2	3	4				
I1		0.715			0.764	743.100 p<0.001	3.626	63.934
I2		0.695						
I3		0.583						
I4		0.604						
I5		0.624						
I6		0.704						
I7		0.640						
I8				0.637				
I9				0.677				
I10				0.658				
I11				0.678				
I12				0.713				
I13				0.647				
I14				0.611				
I15	0.813							
I16	0.646							
I17	0.686							
I18	0.767							
I19	0.821							
I20	0.847							
I21	0.552							
I22	0.644							
I23	0.806							
I24	0.780							
I25			0.742					
I26			0.700					
I27			0.686					
I28			0.762					

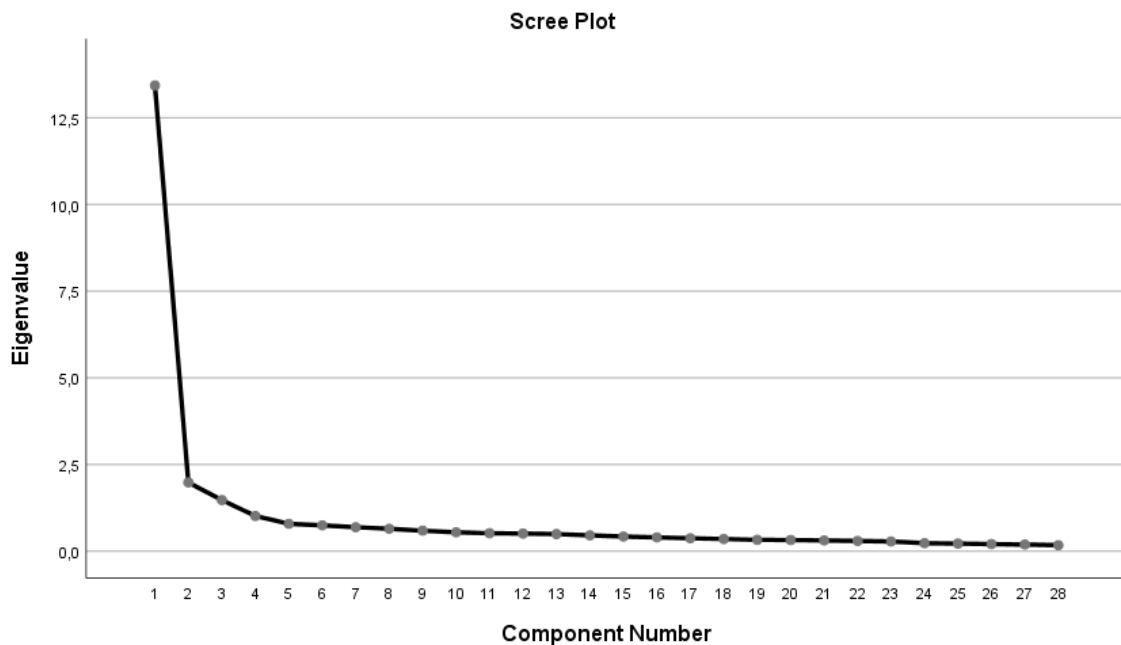


Figure 1. It graphically shows that the scale has a factor with an eigenvalue>1.

Confirmatory factor analysis (CFA)

The goodness-of-fit indices obtained from CFA were as follows: $\chi^2/df=2.055$, RMSEA (root mean square error of approximation) =0.006, CFI (comparative fit

index)=0.97, AGFI (adjusted goodness-of-fit index)=0.96, and GFI (goodness of fit index)=0.97. The fit indices from confirmatory factor analysis indicated a very good fit (Table 3, Figure 2).

Table 3. Goodness of fit criteria of the scale (n=402).

Compliance criteria	Criteria	Goodness of fit results
Chi-square/df	Chi-square/sd < 3	3.055
RMSEA	$0 \leq \text{RMSEA} \leq 1.00$	0.06
CFI	≥ 0.90	0.97
AGFI	$0.90 \leq \text{CFI} \leq 1.00$	0.96
GFI	$0.95 \leq \text{AGFI} \leq 1.00$	0.97

RMSEA: Root mean square error of approximation, SRMR: Standardized root mean square residual, CFI: Comparative fit index, AGFI: Adjusted goodness of fit index, GFI: Goodness of fit index

Table 4. Item-total correlation and internal consistency analysis results of the scale (n=402).

Items	Factors			
	1	2	3	4
I1		0.581		
I2		0.661		
I3		0.612		
I4		0.593		
I5		0.592		
I6		0.610		
I7		0.694		
I8		0.581		0.694
I9				0.725
I10				0.729
I11				0.507
I12				0.491
I13				0.716
I14				0.703
I15	0.774			
I16	0.688			
I17	0.745			
I18	0.789			
I19	0.792			
I20	0.786			
I21	0.718			
I22	0.789			
I23	0.758			
I24	0.783			
I25			0.474	
I26			0.528	
I27			0.436	
I28			0.471	
Cronbach's alpha coefficient (subscales)	0.779	0.766	0.841	0.676
Cronbach's alpha coefficient (Scale-total)	0.859			

Reliability

Cronbach's alpha was employed to assess the internal consistency of the scale. Cronbach's alpha coefficient of the total scale was 0.859. Additionally, the sub-dimensions exhibited coefficients of 0.779, 0.766,

0.841, and 0.676, respectively. The item-total score correlation coefficients for the overall scale, consisting of 28 items, varied from 0.491 to 0.789 (Table 4).

In the pre-test phase, we evaluated the reliability of the test-retest with thirty nurses and doctors engaged in sexual and reproductive health services. The assessments were conducted at two-week intervals to ascertain the consistency of responses. The correlation between test-retest measurements of the scale was 0.438 ($p=0.003$) (Table 5).

Table 5. The correlation between test-retest measurements of the scale.

ASRH-CAT	Re-test
Pre-test	$r=0.438$
	$p=0.003$

^a Pearson correlation test * $p<0.05$

DISCUSSION

This study aimed to adapt ASRH-CAT into Turkish and test its validity and reliability. In this study, ASRH-CAT exhibited a four-factor structure. The α coefficients for the sub-factors and the total score were 0.779, 0.766, 0.841, 0.676, and 0.859, respectively. The correlation between test-retest measurements of the scale was 0.438. Based on these findings, it can be said that the Turkish version of ASRH-CAT is culturally appropriate.

In this study, the ASRH-CAT revealed a structure comprising four factors, and these four factors for 64% of the total variance observed in the measured variables this indicates a strong construct validity (Polit et al., 2007). Similarly, in the original study by Karim et al. (2023), ASRH-CAT also showed a four-factor structure.

The most frequently employed approach for establishing measurement validity is content validity (Grant & Davis, 1997). This method necessitates experts reaching a consensus regarding the accuracy and sufficiency of the proposed content (Crestani et al., 2017). In the current study, input from nine experts was sought. During this stage, five items with a content validity ratio below 0.75 were excluded, adhering to the guidelines outlined by Lawshe (1975). Construct validity of the scale was assessed through EFA and CFA. In the case of multi-dimensional scales, it is advised that the explained variance should be a minimum of 40 (Terwee et al., 2007). During this stage, seven items with factor loadings below 0.40 and cross-loading values were omitted, yielding a final scale comprising 28 items. The values identified in this study align with those from the original study, providing support for this structure. Goodness-of-fit indices calculated using the CFA method indicated that the tested model had a very good fit (>0.90) (MacCallum et al., 1996). A comparison could not be made with Karim et al. (2023)'s original study as they did not report goodness-of-fit indices.

determine the internal consistency of ASRH-CAT (Koo & Li, 2016). In this study, the α coefficients for the sub-dimensions of self-perceived ability in providing ASRH education, self-perceived ability in ASRH management, self-perceived sufficient knowledge in decision-making, and perceived appropriate attitude towards ASRH management were 0.779, 0.766, 0.841, and 0.676, respectively. For the total scale, it was 0.859. These values indicate that ASRH-CAT exhibits high reliability. Karim et al. (2023) reported α coefficients for the sub-dimensions of self-perceived ability in providing ASRH education, self-perceived ability in ASRH management, self-perceived sufficient knowledge in decision-making, and perceived appropriate attitude towards ASRH management as 0.932, 0.949, 0.946, and 0.905, respectively. For the total scale, it was 0.933. These results show similarity with the original scale's outcomes, indicating high internal consistency (Barbera et al., 2021; Karim et al., 2023).

In this study, item-total score correlations for ASRH-CAT range between 0.491 and 0.789. The item-total score correlation coefficient for a given item provides information about the relationship between the scores of that item and the scores of all other items, and it is suggested that the item correlation value should be 0.30 (Sibel & Berat, 2020; Zijlmans et al., 2019). According to these results, it can be stated that all items have a high correlation with the total score. Karim et al. (2023) found item-total score correlations for ASRH-CAT ranging from 0.434 to 1.000.

In this study, a test-retest was conducted at two-week intervals with thirty nurses and doctors working in ASRH. The findings indicate that participants responded similarly in both measurements, suggesting that the items accurately and comprehensibly represent the subject matter. In the original study of the scale, test-retest reliability was tested by repeating responses with six healthcare providers working in sexual and reproductive health services at two-week intervals.

Access to ASRH can be restricted due to socio-cultural norms and taboos (Mazur et al., 2018). Additionally, non-supportive attitudes of healthcare providers, towards adolescents, insufficient emphasis on patient privacy, concerns about the confidentiality of shared information with healthcare providers, difficulties in accessing healthcare institutions, and the provision of low-quality services are factors that hinder adequate utilization of healthcare services (Cappiello et al., 2016). Self-assessment scales to evaluate the competence of healthcare providers, can improve their performance, encourage open communication with adolescents, and enhance the quality of care. The relatively low number of items in the scale facilitates the ease of use. Moreover, considering the absence of a scale to assess the knowledge, attitudes, and behaviors of nurses and

doctors regarding ASRH issues, it is believed that the scale will guide future research in Turkey.

In this study, item-total score correlations for ASRH-CAT range between 0.491 and 0.789. The item-total score correlation coefficient for a given item provides information about the relationship between the scores of that item and the scores of all other items, and it is suggested that the item correlation value should be 0.30 (Sibel & Berat, 2020; Zijlmans et al., 2019). According to these results, it can be stated that all items have a high correlation with the total score. Karim et al. (2023) found item-total score correlations for ASRH-CAT ranging from 0.434 to 1.000.

Limitations and Strengths

Studying has some limitations. Firstly, while the study's sample size is sufficient, the results may not be generalizable as they only include nurses and doctors working in hospitals in two provinces. Secondly, the responses were collected based on self-reporting.

CONCLUSION

The research results demonstrate that ASRH-CAT is a highly reliable scale and measurement tool in Turkey. It is recommended to use the scale to assess the competence of healthcare providers in managing and making decisions about adolescent sexual and reproductive health. Additionally, to strengthen the validity and reliability of the scale further, it can be examined by including a larger sample group that encompasses nurses and doctors working in private hospitals and other healthcare institutions.

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Conflict of Interest

The author declare no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Author Contributions

Plan, design: FD, AK, AP; **Material, methods and data collection:** FD, AK, AP; **Data analysis and comments:** FD, AK; **Writing and corrections:** FD, AK, AP.

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Ethical Approval

Institution: Bartın University Social and Human Sciences Ethics Board

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