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Turkish validity and reliability of the universal mental health literacy scale for adolescents (10-14 years): A methodological study

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Abstract

Rationale: Mental health literacy enables adolescents to acquire information that will accompany them in their future lives and to define their attitudes and behaviors.

Aims and Objectives: This study evaluated the Turkish validity and reliability of the Universal Mental Health Literacy Scale for Adolescents (10–14 years).

Methods: This is a methodological, correlational, cross-sectional, and descriptive study. The study was conducted with 223 adolescents. Data were collected by 'Information Form' and 'Universal Mental Health Literacy Scale for Adolescents.' Exploratory Factor Analysis, Confirmatory Factor Analysis, and Pearson Correlation analysis were used to assess the validity and reliability of the UMHL-A.

Results: Item Content Validity Index (I-CVI) scores ranged from 0.94 to 0.96, while the Scale Content Validity Index (S-CVI) was 0.95. For 'Help-seeking and Stigma dimensions' $\chi^2/df = 3.347$, NFI = 0.804, IFI = 0.854, TLI = 0.778, CFI = 0.849, RMSEA = 0.103. For 'Knowledge of Mental Health and Knowledge of Mental Illnesses dimensions' $\chi^2/df = 1.959$, NFI = 0.731, IFI = 0.847, TLI = 0.774, CFI = 0.837, RMSEA = 0.066. The internal consistency and time stability were affirmed by a Hotelling T-square value of 15.241 and an F-test result of 27.793.

Conclusions: This study reveals that the Turkish validity and reliability of the Universal Mental Health Literacy Scale for Adolescents is a valid and reliable tool for assessing mental health literacy among adolescents. The UMHL-A scale is a valid tool to evaluate critical aspects of mental health literacy in adolescent populations and can be used in both research and clinical practice in mental health education and intervention. It is recommended that the Turkish version of the Universal Mental Health Literacy Scale should be used to determine resilience in adolescents.

KEYWORDS
adolescent, help-seeking, knowledge, literacy, mental health, stigma

1 | INTRODUCTION

Mental health literacy refers to knowledge and beliefs about mental disorders that help to recognize, manage, or prevent mental disorders.[1] MHL includes four key components: understanding how to achieve and maintain good mental health, understanding mental disorders and their treatments, reducing the stigma associated with them, and increasing help-seeking effectiveness.[2,3] It is stated that high-level mental health literacy approaches and developed tools that comprehensively cover the concepts related to mental health problems make a significant contribution to the improvement of mental health worldwide. In this context, the World Health Organization has defined mental health literacy as a component of health literacy and states that it has as important a role as health literacy in improving the health of societies.[4]

Early adolescence is a period of growth in which many physical, sexual, psychological, and social changes are experienced simultaneously. However, these changes cause them to be more vulnerable to health problems and mental health problems. Mental health problems in early adolescence can significantly affect academic achievement and school attendance and may exacerbate social isolation and loneliness.[5,6] Adolescents seeking help are likely to do so from people they know and trust, such as friends or family. However, adolescents need to recognize the problem, accept that they need help, and have positive attitudes towards help-seeking and treatment to show appropriate help-seeking behaviors. Mental health literacy is one of the most effective preventive methods to ensure this.[7]

Mental health literacy enables adolescents to acquire information that will accompany them in their future lives and to define their attitudes and behaviors.[8] Specifically, it allows adolescents to manage their thoughts and emotions positively to establish healthy social and family relationships based on a strong, positive sense of identity. Therefore, without a good level of MHL, adolescents will not be able to develop in a mentally healthy way as they progress toward adulthood.[9] Mental problems are likely to emerge and persist chronically during adolescence. Therefore, adolescents should be the primary target audience for promoting MHL. At the same time, given the apparent prevalence of mental health problems during adolescence and low/moderate levels of MHL, there is a need to explore the available evidence on programs/interventions to promote MHL among adolescents.[10]

UMHL-A young adolescent form is a scale that exceeds the limited structure of other scales and evaluates from a broader perspective. It is thought that the adaptation of the Universal Mental Health Literacy Scale for Adolescents (UMHL-A),[11] which was developed to assess the Mental Health Literacy (MHL) of young adolescents (10–14 years), to Turkish by determining its psychometric properties will fill an important gap. In this study, it was aimed to adapt the scale to Turkish by placing the self-reports of young adolescents regarding mental health literacy on a broader conceptual basis.

2 | METHODS

2.1 | Study type

This study used a methodological and descriptive design to adapt the Turkish version of the Universal Mental Health Literacy Scale for Adolescents (UMHL-A) developed by Kågstrom et al., (2023) and to evaluate its validity and reliability.[11] The study was conducted following the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines. The STROBE guidelines provide a structured approach to reporting observational studies.[12] The methodology was conducted in accordance with the established guidelines, which entailed the delineation of a comprehensive set of procedures. These included the formulation of a clear title, introduction, and methods section, which outlined the study design, setting, participants, data collection tools, data collection procedure, results, and conclusions.[11]

2.2 | Study participants

To ensure a thorough and representative sample for validating the Turkish adaptation of the "Universal Mental Health Literacy Scale for Adolescents," we employed a strategic recruitment process in collaboration with the National Teachers' Association in Turkey. This collaboration enabled us to access a diverse demographic of children across various regions and socioeconomic backgrounds through the association's extensive network.

The study included children aged 10–14 who were online from January 2024 to February 2024. In accordance with the recommendations for scale adaptations, a sample size of at least 5–10 times the number of scales is recommended. Determining the sample size for the scale, Tabachnick and Fidell suggest that the participant/item ratio should be 10:1.[12] In the existing literature, the following sample sizes are typically recommended for psychometric studies: 200 is considered medium, 300 is regarded as good, 500 is viewed as very good, and 1000 is deemed excellent.[13] Based on the literature, since the number of items in the scale to be adapted is 17, we aim to reach at least 200 children aged 10–14. Considering the dropout rate, the sample size increased by 20%, and at the end of the study, we reached 223 children.

2.3 | The recruitment process

The recruitment process for the study commenced with the invitation of 300 mothers, 300 fathers, and 300 children to participate. Of the 300 mothers invited to participate, 250 agreed, while 50 declined. Among the 250 mothers who agreed to take part, 17 provided incomplete information. Similarly, 250 fathers agreed to participate, with 50 declining. Among the fathers who agreed to take part, 17 provided incomplete information. A total of 250 children agreed to participate in the study, with 50 declining and 27 providing

incomplete responses. After accounting for incomplete forms, the final total number of participants in the study was 223 (Figure 1).

The inclusion criteria were determined as follows: Participants must be literate, fluent in Turkish, have no auditory or visual impairment, volunteer for the study, and have a child between the ages of 10–14.

Exclusion criteria were as follows: incomplete data.

2.4 | Data collection tools

2.4.1 | Descriptive information form

The form consists of 12 questions about the socio-demographic characteristics of the participants: age, gender, school attendance, family income level, number of siblings, family type, parents' age, parents' education level, and parents' employment status.

2.4.2 | Universal mental health literacy scale for adolescents (UMHL-A)

The scale developed by Kågstrom et al. (2023) to assess resilience in children aged 10–14 years, with a focus on assessing mental health literacy in adolescents.[14] This tool, called the 'Universal Mental Health Literacy Scale for Adolescents (UMHL-A)', consists of four different subscales: 1. Help-Seeking (HS), 2. Stigma (ST), 3. Knowledge about Mental Health (KMH) and 4. Knowledge about Mental

Illnesses (KMI). The UMHL-A uses a dual-measurement approach. The eight-item Help-Seeking and Stigma subscales use a 5-point Likert scale with an additional 'don't know' option. In contrast, the nine-item Knowledge of Mental Health and Knowledge of Mental Illness subscales are measured with a binary true/false scale supplemented by a 'don't know' option. The Likert scale for the UMHL-A is coded as follows: 1 (Strongly Disagree), 2 (Disagree), 3 (Neither Agree nor Disagree), 4 (Agree), 5 (Strongly Agree) and 'Don't Know' (3). Scores for the Help Seeking subscale can range from 5 to 25, while Stigma scores range from 3 to 15. Coding for the true/false scale was defined as follows: Yes (1), Don't know (0), No (0). According to the scoring criteria, Knowledge about Mental Health scores range from 0 to 5, and Knowledge about Mental Illnesses scores range from 0 to 4. Higher scores are indicative of higher mental health literacy. Notably, the scale does not include items that require reverse scoring.

3 | VALIDITY AND RELIABILITY STAGES

3.1 | Translation process

In adapting the scale for language compatibility, a translation-back-translation methodology was used to reduce conceptualization and wording differences, adhering to the five-stage framework endorsed by the World Health Organization (WHO).[15,16] This approach started with the initial translation of the scale from English to Turkish by three bilingual experts who were fluent in both Turkish (native
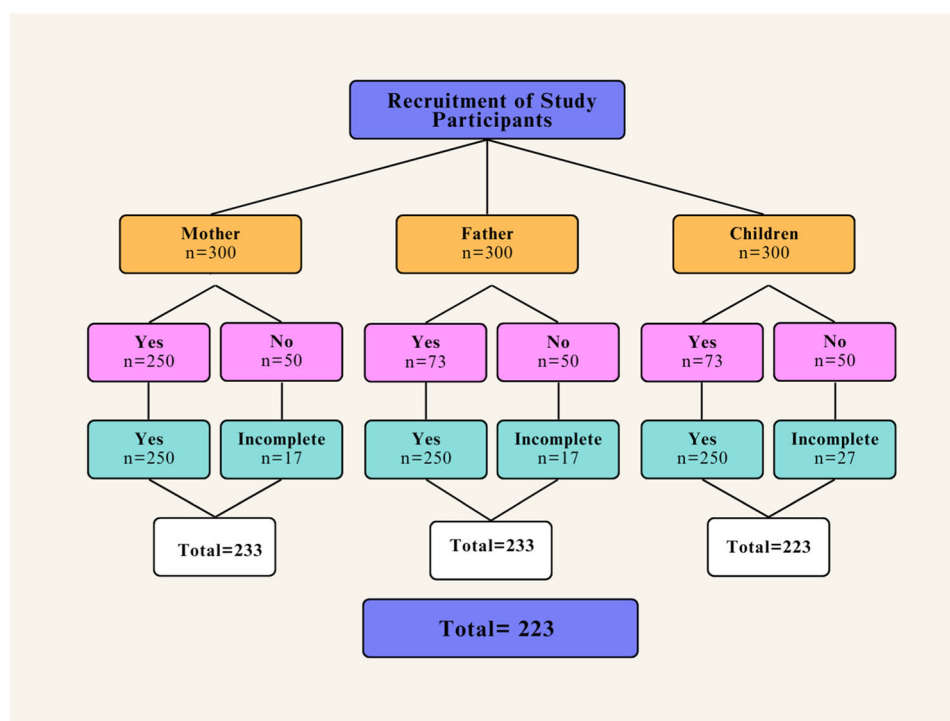

FIGURE 1 Flowchart of the recruitment of the study participants.

4 | WILEY— Journal of Evaluation in Clinical Practice
International Journal of Public Health Policy and Health Services Research

UYSAL ET AL.

language) and English. The WHO emphasizes the involvement of health professionals who are familiar with the specific terminology of the scale and experienced in qualitative data collection for this translation task.[15] In this study, the translation was carried out by three translators who were experts in the relevant subject matter, ensuring they were aware of the cultural, psychological, and linguistic nuances between English and Turkish.[17] The translations were then reviewed by the lead researcher (forming an Expert Panel) and independently translated back into English by two bilingual experts. These experts, who were proficient in both languages, had not previously been exposed to the English version of the scale, thus ensuring an unbiased back-translation process.[15,17] After the back-translation versions were presented side by side with the original English text, the Turkish translation was meticulously reviewed, and necessary corrections were made to align with the original wording and meaning more closely.

3.2 | Expert panel/opinions

At this stage, the evaluation of the semantic and conceptual equivalence of the scale is requested from people designated as experts. Experts should evaluate the suitability of each item to the target culture, and the people designated as experts should know the original and target languages, cultures, the characteristics of the scale, and scale adaptation methods. It is recommended to get opinions from at least three experts for the content scope.[18,19] This study consulted ten experts specializing in child psychology and psychiatry for content validity. Content validity was calculated using the content validity index (CVI) derived from Polit and Beck's expert assessments of item appropriateness. In this study, the CVI was compared with alternative indices, and it was determined that the widely used CVI offers advantages in ease of calculation, comprehensibility, emphasizing agreement rather than mere agreement, emphasizing agreement rather than consistency, and providing comprehensive item and scale information. Items with an I-CVI value of 0.80 or higher evaluated by three or more experts can be accepted as an indicator of good content validity.[19]

3.3 | Pilot test

In accordance with the World Health Organization's (2009) guidelines on the adaptation of measurement instruments, a rigorous back-translation process was conducted, with the input of experts fluent in both languages.[15] As emphasized by Yasir (2016), this recommendation requires the participation of at least two translators.[20] In our study, the Turkish version of the scale was translated into English by two experts competent in both languages after expert opinions. Then, the researchers evaluated both the original and translated versions of the scale and the scale was prepared for pilot application after the necessary corrections were made.[21]

For pilot application, it is recommended to apply the scale to a group of 20–30 people who have similar characteristics to the study participants but are not included in the primary study sample.[21] The pilot study involved 30 adolescents, selected to reflect the broader sample's characteristics while ensuring they were not part of the primary study. This selection process aimed to capture a range of literacy and educational levels, ensuring that the scale's performance could be evaluated across different subgroups. The scale was administered twice, with a 2-week interval, to assess its temporal stability and consistency.

3.4 | Data collection

To facilitate the recruitment of participants, the research team collaborated with the National Teachers' Association in Turkey and utilized its extensive network to reach parents. The teachers, who were members of the association, were provided with a link to the study via the existing WhatsApp groups, which included the parents of the students in their classes. Parents who expressed interest in participating were instructed to click on the "I accept the online survey" button within the message. This directed them to the online Google survey, where they were able to review the information. The Google Form consisted of four sections. The first section included two tick boxes to obtain the consent of both parents and information about the study; the second section included information about the study and a tick box for the children to indicate their consent; the third section included questions about the descriptive characteristics of the children and families; and the fourth section included the "Universal Mental Health Literacy Scale for Adolescents" scale. Once consent had been obtained from both parents by selecting the appropriate checkboxes in the initial section, access to the survey was granted to the children. Additionally, children were required to indicate their consent in the second section by selecting a checkbox before proceeding with the survey, thereby ensuring that they were willing participants. Parents who had not consented to opt out of the process were provided with written instructions within the questionnaire. Following the acquisition of parental consent and the children's consent, the children were invited to complete the survey. The children were provided with an explanation of the study and were informed that their participation was entirely voluntary and that they could withdraw at any time. The nationwide network of teachers enabled access to a diverse sample of children from different regions and socioeconomic backgrounds in Turkey. The final sample consisted of 223 children aged 10–14, exhibiting a demographic profile representative of the broader Turkish population in this age group. The survey was conducted online via a Google Forms platform. The process was designed to be simple and quick, with an estimated completion time of 5–10 min. All responses were anonymized, and data were stored securely, with access restricted to the research team.

3.5 | Data analysis

Data analysis was performed using IBM SPSS Statistics, Version 28.0 (Armonk, NY: IBM Corp.), and further structural equation modeling

was performed with the AMOS 26 software package. Descriptive data of adolescents were presented using means, standard deviations, frequency distributions, and percentages. EFA was used to determine the number and nature of latent variables (factors) that can explain the pattern of correlations within a set of observed variables. The Hotelling T-square passed the internal consistency and time stability assessment. Pearson Correlation evaluated item-total score correlations and item-subscale total score correlations. Confirmatory Factor Analysis (CFA) was used for the validity dimension of the study. CFA is a robust statistical technique used to test the hypothesis that there is a relationship between observed variables and their underlying latent constructs. The fit of the model was assessed using various indices such as Chi-Square Goodness of Fit, Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Incremental Fit Index (IFI). Reliability analysis focused on examining the internal consistency of the scales. This was done using Cronbach's alpha coefficient, a reliability coefficient commonly used in scale development studies. The overall data analysis process, including methodologies and statistical approaches, is visually summarized in Figure 1. This comprehensive approach to data analysis ensures that the instrument used in the study is valid and reliable for measuring the intended constructs in the context of adolescents.

4 | ETHICAL CONSIDERATIONS

Ethical approval was obtained from the Ethics Committee of Okan University before starting the research activities. All participants were thoroughly informed about the study's aims and the potential risks and benefits of participating. They were also informed about their rights, including the right to withdraw from the study at any point without any adverse consequences. Informed consent was obtained from all participants. The study followed the ethical standards outlined in the Declaration of Helsinki.

5 | RESULTS

5.1 | Results of the adolescents' characteristics

In the study, 223 adolescents were included. Fifty-seven-point-four percent of them were girls, and 42.6 percent were boys. The mean age of the participants was 12.22 ± 1.49 years. All participants were attending school. Most participants (90.1%) had nuclear families, and 56.5% had middle-income families. The mother of 58.3% and the father of 53.8% of the adolescents had a university education (Table 1).

5.2 | Results of validity analysis

A significant consensus among the experts was observed, reflected in the Item Content Validity Index (I-CVI) scores ranging from 0.94 to

TABLE 1 The adolescents' characteristics ($n = 223$).

Variables	Mean ± SD
Age (years)	12.22 ± 1.49
Mother age	41.34 ± 5.55
Father age	45.31 ± 5.56
Gender	**n (%)**
Female	128 (57,4)
Male	95 (42,6)
School attendance	
Yes	223 (100)
Family structure	
Nucleus	102 (90.1)
Expand	22 (9,9)
Family income level	
Low-income level	27 (12.1)
Moderate income level	126 (56.5)
High-income level	70 (31.4)
Mother's education level	
Literate	6 (2.7)
Primary school	31 (13.9)
High school	56 (25.1)
University	130 (58.3)
Father's education level	
Literate	4 (1.8)
Primary school	31 (13.9)
High school	68 (30.5)
University	120 (53.8)

Abbreviation: SD, Standard deviation.

0.96 for each item. The Scale Content Validity Index (S-CVI) for the total scale was 0.95, emphasizing the strong agreement among the experts on the overall content validity of the scale.

5.3 | Results of reliability analysis

The correlation values of UMHL-A analyses of the UMHL-A are presented in Table 2. The general item-total score correlation on the scale varies between 0.339 and 0.696. The item subscale correlation values ranged between 0.631 and 0.785 for the help-seeking and stigma dimension, 0.507–0.657 for the Knowledge of Mental Health and Knowledge of Mental Illnesses dimensions (Table 2).

In the internal consistency and time stability assessment, the Hotelling T-square value was 15.241, and the F test was

6 | WILEY— Journal of Evaluation in Clinical Practice
International Journal of Public Health Policy and Health Services Research

UYSAL ET AL.

27.793. There was no significant evidence of response bias in the scale ($p < 0.01$). Furthermore, the analysis of summability produced a p-value of 0.869 and an F-statistic of 0.596, confirming the reliability of the scale.

TABLE 2 Correlations values of UMHL-A.

Items	Item total score correlations	Item-subscale total score correlations
Help-seeking and Stigma dimensions		
MHL1a	0.696	0.677
MHL2a	0.587	0.631
MHL3a	0.437	0.740
MHL4a	0.598	0.652
MHL5a	0.609	0.637
MHL6a	0.691	0.785
MHL7a	0.616	0.702
MHL8a	0.339	0.646
Knowledge of mental health and knowledge of mental illnesses dimensions		
MHL1b	0.470	0.526
MHL2b	0.412	0.574
MHL3b	0.506	0.641
MHL4b	0.445	0.584
MHL5b	0.410	0.657
MHL6b	0.640	0.625
MHL7b	0.505	0.661
MHL8b	0.399	0.520
MHL9b	0.413	0.507

5.3.1 | Exploratory factor analysis of UMHL-A Help-Seeking and stigma

Exploratory factor analysis (EFA) was conducted to examine potential factor solutions in the research sample. In the original scale, under the assumption that the dimensions would be related to each other, oblimin rotation was applied considering the maximum likelihood potential. Accordingly, oblimin rotation was also used in this study. The exploratory factor analysis of Help-seeking and Stigma is presented in Table 3. The results of KMO and Bartlett's test showed the appropriateness of the sample size with a KMO value of 0.751 and the adequacy of the items for factor analysis as evidenced by Bartlett's test ($\chi^2 = 318.877$, $p < 0.001$). Exploratory factor analysis (EFA) provided two different factor structures. The first, 'Help-Seeking,' was explained 34.62% of the total variance, while the second, 'Stigma,' was explained 50.35%.

The exploratory factor analysis of UMHL-A True and False scale: Knowledge of mental health and knowledge of mental illnesses is presented in Table 4. The results of KMO and Bartlett's test showed the appropriateness of the sample size with a KMO value of 0.648 and the adequacy of the items for factor analysis as evidenced by Bartlett's test ($\chi^2 = 185.811$, $p < 0.001$). EFA provided two different factor structures. The first, 'Knowledge of Mental Health,' was explained 23.71% of the total variance, while the second, 'Knowledge of Mental Illnesses,' was explained 38.34%.

CFA is crucial in determining construct validity, which is concerned with how well a scale measures the construct it is intended to measure. Through CFA, you can assess whether the items in your instrument correlate well with the underlying theoretical constructs they are intended to measure. To determine the dimensional structure of the UMHL-A, CFA was used. The two-factor model (Figures 2 and 3) showed acceptable goodness-of-fit indices. For 'Help-seeking and Stigma dimensions' $\chi^2/df = 3.347$, NFI = 0.804, IFI = 0.854, TLI = 0.778,

TABLE 3 Exploratory factor analysis of the UMHL-A Likert scale: Help-seeking and stigma dimensions.

	Dimensions		Rate of variances explained by factors	EFA Results
Items	HS	ST		
MHL1a. Talking about my feelings with someone helps to improve mental health.	0.612		HS = 34.62% ST = 50.35%	KMO=0.751 Bartlett's test, $\chi^2 = 318.877$, $p < 0.001$
MHL2a. I am comfortable talking to my peers about my feelings.	0.502			
MHL3a. How I get along with others affects my mental health		0.792		
MHL4a. If I experienced mental health problems, I would seek help.	0.731			
MHL5a. If someone I care about had mental health problems for a long time I would encourage them to get professional help		0.568		
MHL6a. I am comfortable talking to adults in my life about my feelings.	0.796			
MHL7a. If I had a mental disorder I would speak about it with others.	0.706			
MHL8a. I would be willing to continue a friendship with someone who developed a mental health problem.		0.675		

TABLE 4 Exploratory factor analysis of UMHL-A True and False scale: Knowledge of mental health and knowledge of mental illnesses.

Items	Dimensions		Rate of variances explained by factors	EFA Results
	KMH	KMI		
MHL1b. Getting along with others is important for mental health.		0.624	KMH = 23.71% KMI = 38.34%	KMO = 0.648 Bartlett's test, $\chi^2 = 185.811$, $p < 0.001$
MHL2b. Mental illnesses are caused by different things	0.443			
MHL3b. Mental health impacts people's behavior	0.773			
MHL4b. Mental disorders affect people's emotions	0.743			
MHL5b. Depression is one of the most common mental illnesses among young people.	0.400			
MHL6b. The way people feel over time is a sign of their mental health		0.355		
MHL7b. How people think about things affects their mental health.		0.631		
MHL8b. How people get along with others affects how they feel.		0.700		
MHL9b. How people think about things affects how they feel.		0.375		

FIGURE 2 Help-seeking and stigma factor model of the UMHL-A.
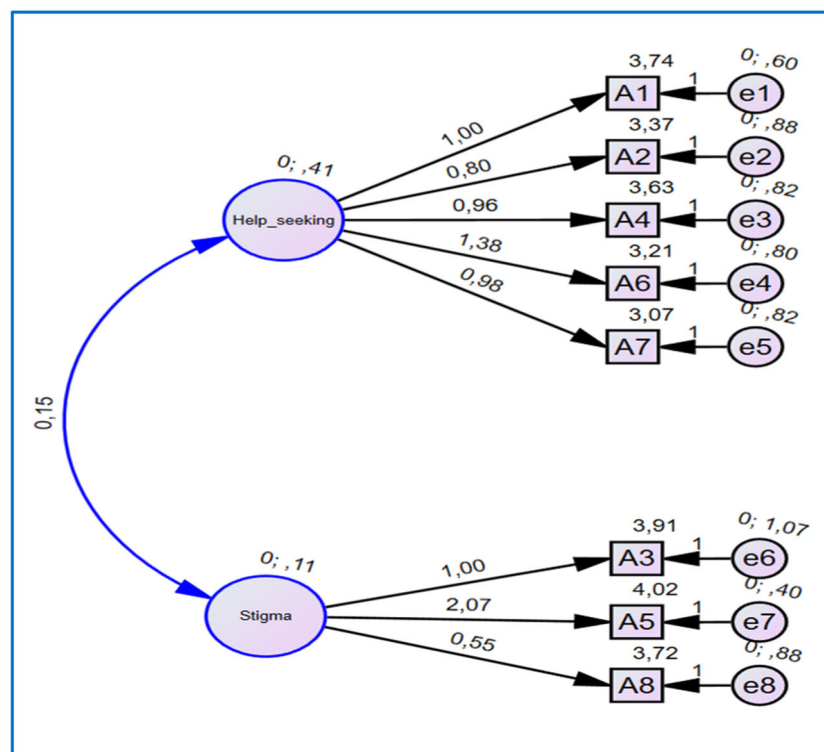
CFI = 0.849, RMSEA = 0.103. For 'Knowledge of Mental Health and Knowledge of Mental Illnesses dimensions' $\chi^2/df = 1.959$, NFI = 0.731, IFI = 0.847, TLI = 0.774, CFI = 0.837, RMSEA = 0.066 (Table 5).

6 | DISCUSSION

As emphasized by Singh and colleagues, raising mental health literacy levels is essential for raising a generation of adolescents who can sustain better mental health.[22] Children between the ages of 10–14

could express their thoughts and engage in important discussions about mental health issues. Consequently, there is a need for a strategy in adolescent mental health education that specifically aims to prevent more serious mental health problems in the future. The purpose of such preventive efforts is multifaceted: As emphasized by Bale et al.[23] and Ratnayake and Hyde,[24] enlightening young people about mental health, enabling them to understand mental health concepts better, reducing stigmatizing views of mental health, and promoting a culture of help-seeking when needed. In light of these considerations, this study was designed to assess the validity and
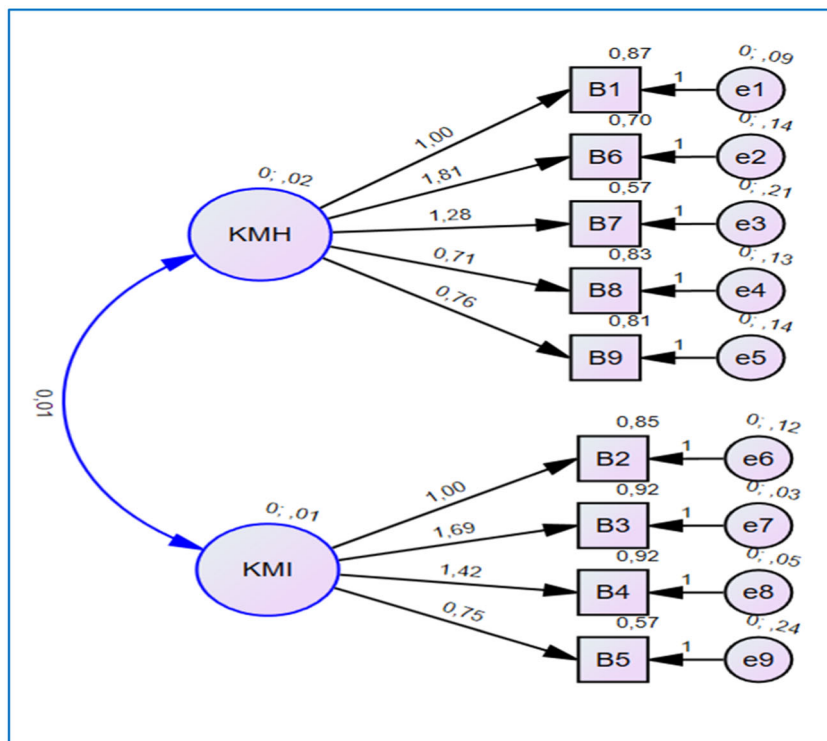
8 | WILEY—Journal of Evaluation in Clinical Practice
International Journal of Public Health Policy and Health Services Research

UYSAL ET AL.

FIGURE 3 Knowledge of mental health and knowledge of mental illnesses factor model of the UMHL-A.

TABLE 5 Goodness-of-fit indices of the tested CFA models for UMHL-A.

UMHL-A dimensions	n	CMIN	df	χ^2	NFI	IFI	TLI	CFI	RMSEA
Help-seeking and stigma dimensions	223	63.598	19	3.347	0.804	0.854	0.778	0.849	0.103
Knowledge of mental health and knowledge of mental Illness dimensions	223	50.932	26	1.959	0.731	0.847	0.774	0.837	0.066

Abbreviations: CFI, Comparative Fit Index; df, Degrees of Freedom; GFI, Goodness of Fit; IFI, Incremental Fit Index; NFI, Normed Fit Index; RMSEA, Root Mean Standard Error Approximation; TLI, Trucker-Lewis Index; χ^2, Chi-square.

reliability of the Turkish version of the Universal Mental Health Literacy Scale for adolescents aged 10–14 years.

The content validity analysis provided important information about the suitability and appropriateness of the scale items, as assessed by a panel of 10 experts in the field. The Item Level Content Validity Index (I-CVI) showed results ranging from 0.94 to 0.96, indicating a strong consensus among experts regarding the content validity of the scale.[25] These findings not only confirm the content validity of each item in the scale, but also indicate that the items accurately reflect the intended dimensions of mental health literacy among adolescents as conceptualized by the developers of the scale. Furthermore, the evaluation provided a holistic view of the validity of the scale by extending to the overall scale through the scale level content validity index (S-CVI). The S-CVI obtained an important consensus among experts on the comprehensive validity of the scale by obtaining an impressive value of 0.95.[19,26] This consensus emphasizes the consistency of the scale with the underlying conceptual framework that aims to measure adolescents' mental health literacy. Kågström et al.[14] further strengthened the content validity of the

original scale using methodologies such as the Delphi technique, focus groups, and cognitive interviews. Through these iterative processes, an agreement on the content of the scale was reached, ensuring that the adapted scale accurately represented the intended construct of mental health literacy among adolescents. This approach to establishing content validity suggests that the scale is both relevant and appropriate for assessing mental health literacy in this group.

Item-total correlation analysis, a separate dimension of scale reliability, shows the relationship between the scores obtained from each scale item and the scale's total score.[27] The item-total correlation value should exceed 0.30 so that the item effectively measures the intended behavior or construct being assessed by the scale.[28,29] In this study, results show that the item-total score correlation on the scale varies between 0.339 and 0.696. The item subscale correlation values are also more than 0.30. The analysis revealed a highly significant relationship between the scores obtained from the Knowledge of Mental Health and Knowledge of Mental Illness dimensions. This study conducted a comprehensive examination to determine the

internal consistency and stability of the scale over time.[30] For this purpose, Hotelling T-square and F tests were used, and values of 15.241 and 27.793 were obtained, respectively. These measures are critical in understanding how consistent and reliable the scale remains over different periods. The results show that the scale does not change over time and, therefore, has no bias ($p < 0.01$).[29,30] In this study, Cronbach's alpha value, commonly used to measure the internal consistency and reliability of the scale, could not be calculated.[31] The reason for this limitation is that the items in the scale are structured in a dichotomous format; that is, each item is answered in only one of two ways (e.g., "True," "False," and "Do not know").[32] Cronbach's alpha is more appropriate for items measured on a scale with more than two possible responses, as it assesses how closely a group of items are related.[33] Therefore, due to the dichotomous nature of the scale items, Cronbach's alpha could not be used to assess the scale's reliability.

The Kaiser-Meyer-Olkin (KMO) test and Bartlett's test were conducted to ensure the adequacy of the sample size and the appropriateness of the data structure.[34,35] The KMO value of 0.751 in the "Help-Seeking" and "Stigma" sections of the scale shows that the sample size is suitable for factor analysis. Bartlett's test also yielded a significant result ($\chi^2 = 318.877$, $p < 0.001$), indicating that the items in the data set were sufficiently correlated for factor analysis. These findings support the suitability of the data for further analysis. The variance in "Help-Seeking" was 34.62% of the total, while the variance in "Stigma" was 50.35%. This suggests that "Stigma" had a greater impact on the overall variability observed in the data compared to "Help-Seeking". The KMO value was 0.648, and Bartlett's test results were $\chi^2 = 185.811$ ($p < 0.001$) for Knowledge of Mental Health and Knowledge of Mental Illnesses. The items were adequate for factor analysis, as supported by The EFA revealed two distinct factor structures: "Knowledge of Mental Health," which accounted for 23.71% of the total variance, and "Knowledge of Mental Illnesses," which explained 38.34% of the total variance. The KMO value for both parts of the UMHL-A scale is 0.65 and above, which is above the recommended threshold and indicates a suitable condition for performing EFA.[29,34,36,37] This statistic, which evaluates the proportion of variance shared between variables, indicates that the data set is rich enough to reveal the factors underlying mental health literacy in adolescents.[37] In addition, the statistically significant result of Bartlett's Sphericity Tests ($p < 0.001$) further strengthens the suitability of the data for factor analysis.[29,34] The significance of this result shows that these variables do not exist independently and that the items are related to each other.

The CFA was utilized to ascertain the dimensional structure of the UMHL-A. This analysis involved a two-factor model, as presented in Figures 2 and 3. The model demonstrated acceptable goodness-of-fit indices, which are crucial for validating the model's accuracy and reliability. Specifically, for the dimensions of 'Help-seeking and Stigma,' the model yielded a chi-square to degrees of freedom ratio (χ^2/df) of 3.347. Although slightly above the ideal range of 1 to 3, this ratio still indicates a reasonable fit.[29,38,39] The NFI was 0.804, indicating a good fit as it is close to 0.8. The IFI stood at 0.854, TLI at

0.778, and the CFI was 0.849; all these indices suggest a moderate to good fit, as values above 0.8 are generally considered acceptable.[39–41] The RMSE was 0.103, which is slightly above the preferred threshold of 0.08, suggesting a moderate fit. For the dimensions 'Knowledge of Mental Health and Knowledge of Mental Illnesses,' the model's fit was more robust with a χ^2/df of 1.959, indicating a good fit within the ideal range. The NFI was 0.731, slightly below the preferred threshold but still indicative of a reasonable fit. The IFI was 0.847, TLI was 0.774, and CFI was 0.837, all close to the acceptable benchmark of 0.8, suggesting a moderate to good model fit. Notably, the RMSEA for this set of dimensions was 0.066, well within the ideal range (less than 0.08), highlighting a good fit.[29,40] These detailed indices are presented in Table 5, providing a comprehensive understanding of the model's validity in measuring mental health literacy among adolescents.

6.1 | Limitations

This study has several limitations that should be considered when interpreting the findings. Firstly, while the study successfully demonstrated the Turkish validity and reliability of the scale within this demographic, further investigation is required to ascertain the applicability of the scale to wider adolescent age ranges, as well as its cross-cultural and predictive validity. Further research is required to investigate the performance of the scale in different cultural settings, languages, and age demographics, as well as its consistency of meaning for adolescents outside the 10–14 age range. Additionally, the study sample may be influenced by several factors. The study utilized a purposive sampling method in collaboration with the National Teachers' Association in Turkey, which allowed us to reach a diverse group of families from various regions. However, the reliance on WhatsApp as the primary platform for participant recruitment may have introduced a degree of bias, particularly underrepresenting families without access to smartphones or those less familiar with digital communication. While the demographic distribution of our sample aligns with the expected diversity within the relevant age group, the lack of direct access to broader national datasets for a more detailed comparison represents a limitation. The study design required both parents to agree to participate, with the child's involvement contingent on mutual parental consent. While this approach ensured that both parents were fully informed and consented to their child's participation, it may have also excluded families where only one parent was willing or able to consent. It is possible that the findings of this study may not be generalizable, as certain family dynamics or societal factors may have influenced the decision to participate. These limitations underscore the need for caution in generalizing the findings of this study to other populations or settings. It is recommended that future research address these issues by including broader age ranges, utilizing multiple recruitment platforms, and comparing findings across different cultural contexts. This will enhance the validity and applicability of the UMHL-A scale.
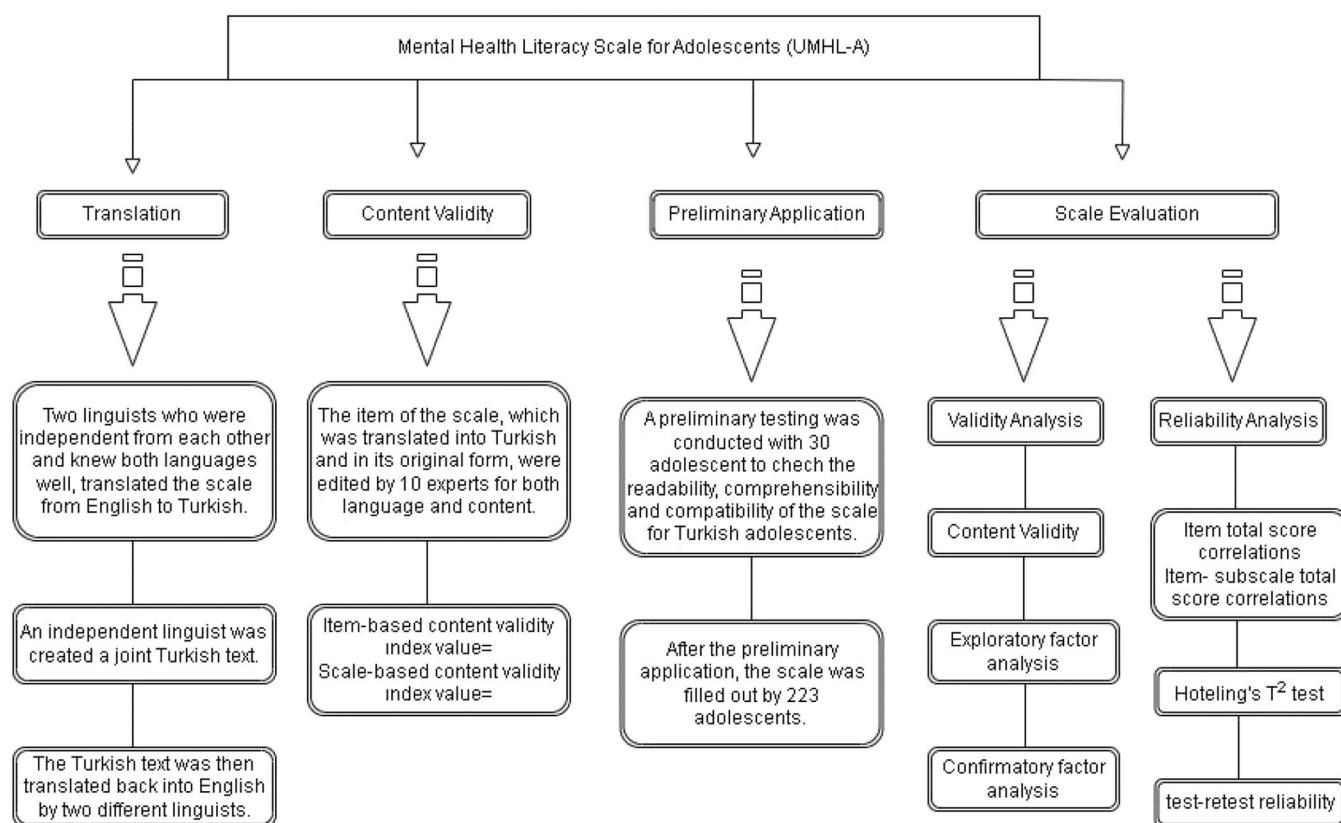
10 WILEY— Journal of Evaluation in Clinical Practice
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UYSAL ET AL.

Mental Health Literacy Scale for Adolescents (UMHL-A)

Translation | Content Validity | Preliminary Application | Scale Evaluation

Two linguists who were independent from each other and knew both languages well, translated the scale from English to Turkish.

An independent linguist was created a joint Turkish text.

The Turkish text was then translated back into English by two different linguists.

The item of the scale, which was translated into Turkish and in its original form, were edited by 10 experts for both language and content.

Item-based content validity index value=
Scale-based content validity index value=

A preliminary testing was conducted with 30 adolescent to chech the readability, comprehensibility and compatibility of the scale for Turkish adolescents.

After the preliminary application, the scale was filled out by 223 adolescents.

Validity Analysis | Reliability Analysis

Content Validity

Exploratory factor analysis

Confirmatory factor analysis

Item total score correlations
Item- subscale total score correlations

Hoteling's T^2 test

test-retest reliability

DIAGRAM 1 Flowchart of the study.

7 | CONCLUSION

This study demonstrates that the Turkish adaptation of the Universal Mental Health Literacy Scale for Adolescents (UMHL-A) is a valid and reliable instrument for assessing mental health literacy in the adolescent population. The findings emphasize the effectiveness of the scale in measuring the essential dimensions of mental health awareness and make it usable for both outpatient and inpatient clinical settings in mental health education and intervention strategies. Its proven validity and reliability confirm the utility of the UMHL-A scale in promoting a deeper understanding of mental health issues among adolescents, thus supporting the development of informed, evidence-based practice in this area. In this context, the scale is recommended for health professionals in healthcare institutions. Diagram 1

AUTHOR CONTRIBUTIONS
Gülzade Uysal: Conceptualization, methodology, formal analysis, writing—original draft, visualization, project administration. **Remziye Semerci**: Conceptualization, methodology, formal analysis, writing—original draft, visualization, project administration. **Rukiye Şengün**: Conceptualization, methodology, resources, writing—original draft, project administration. **Duygu Sönmez Düzkaya**: Conceptualization, methodology, resources, writing—original draft, project administration.

CONFLICT OF INTEREST STATEMENT
The authors declare no potential conflicts of interest.

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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REFERENCES
1. Clark LH, Hudson JL, Rapee RM, Grasby KL. Investigating the impact of masculinity on the relationship between anxiety specific mental

health literacy and mental health help-seeking in adolescent males. *J Anxiety Disord*. 2020;76:102292.

2. Bjørnsen HN, Espnes GA, Eilertsen MEB, Ringdal R, Moksnes UK. The relationship between positive mental health literacy and mental well-being among adolescents: implications for school health services. *J Sch Nurs*. 2019;35(2):107-116.

3. Jorm AF, Korten AE, Jacomb PA, Christensen H, Rodgers B, Pollitt P. "Mental health literacy": A survey of the public's ability to recognise mental disorders and their belief about the effectiveness of treatment. *Med J Aust*. 1997;17-166(4):182-186.

4. Kanj M, Mitic W. *Working document: 7th Global Conference on Health Promotion, Promoting Health and Development: closing the implementation gap*. Nairobi, Kenya: Geneva (CH): World Health Organization; 2009:26-30. Available from: http://www.who.int/healthpromotion/conferences/7gchp/Track1_Inner.pdf

5. Wisnusakti K, Kumala TF, Hidayat MM. Overview of emotional stability in class adolescents based on nursing perspectives. *J Keperawatan Komprehensif (Comprehensive Nursing Journal)*. 2022;8(Special Edition): 1-5.

6. Kiss O, Alzueta E, Yuksel D, et al. The pandemic's toll on young adolescents: prevention and intervention targets to preserve their mental health. *J Adolesc Health*. 2022;70(3):387-395.

7. Patafio B, Miller P, Baldwin R, Taylor N, Hyder S. A systematic mapping review of interventions to improve adolescent mental health literacy, attitudes and behaviours. *Early intervention in psychiatry*. 2021;15(6):1470-1501.

8. Kieling C, Baker-Henningham H, Belfer M, et al. Child and adolescent mental health worldwide: evidence for action. *The Lancet*. 2011;378:1515-1525.

9. Kutcher S, Wei Y, Costa S, Gusmão R, Skokauskas N, Sourander A. Enhancing mental health literacy in young people. *Eur Child Adolesc Psychiatry*. 2016;25:567-569.

10. Nobre J, Oliveira AP, Monteiro F, Sequeira C, Ferré-Grau C. Promotion of mental health literacy in adolescents: a scoping review. *Int J Environ Res Public Health*. 2021;18(18):9500.

11. Von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP. The strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. *The Lancet*. 2007;370(9596):1453-1457.

12. Tabachnick Barbara G, Fidell Linda S. *Experimental designs using ANOVA*. 724. Thomson/Brooks/Cole; 2007.

13. Karagöz Y. *SPSS and AMOS 23 Applied Statistical Analysis*. Nobel Academic Publishing; 2016.

14. Kågström A, Pešout O, Kučera M, Juríková L, Winkler P. Development and validation of a universal mental health literacy scale for adolescents (UMHL-A). *Psychiatry Res*. 2023;320:115031.

15. World Health Organization. (2009). *Process of translation and adaptation of instruments*. http://www.who.int/substance_abuse/research_tools/translation/en/

16. Hernández A, Hidalgo MD, Hambleton RK, Gómez Benito J. International test commission guidelines for test adaptation: A criterion checklist. *Psicothema*. 2020;32(3):390-398.

17. Çapık C, Gözüm S, Aksayan S. Kültürlerarası ölçek uyarlama aşamaları, dil ve kültür uyarlaması: güncellenmiş rehber. *Florence Nightingale J Nurs*. 2018;26(3):199-210.

18. Esin MN, Veri S toplama yöntem ve araçları & veri toplama araçlarının güvenirlik ve geçerliği, Erdoğan N, Nahcivan ve M. N. Esin (Ed.). *Hemşirelikte araştırma: Süreç, uygulama ve kritik içinde*. İstanbul: Nobel Tıp Kitabevleri; 2014:s. 169-192.

19. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Res Nurs Health*. 2007;30(4):459-467.

20. Yasir AS. Cross cultural adaptation & psychometric validation of instruments: step-wise. *Int J Psychiatry*. 2016;1(1):4.

21. Şencan H, Sosyal ve davranışsal ölçümlerde güvenilirlik ve geçerlilik, Seçkin Yayıncılık Sanayi ve Ticaret AŞ, 2005; Ankara.

22. Singh S, Zaki RA, Farid NDN, Kaur K. The determinants of mental health literacy among young adolescents in Malaysia. *Int J Environ Res Public Health*. 2022;19(6):3242.

23. Bale J, Grové C, Costello S. Building a mental health literacy model and verbal scale for children: results of a delphi study. *Child Youth Serv Rev*. 2020;109:104667.

24. Ratnayake P, Hyde C. Mental health literacy, help-seeking behaviour and wellbeing in young people: implications for practice. *Educ Dev Psychol*. 2019;36(1):16-21.

25. Almanasreh E, Moles R, Chen TF. Evaluation of methods used for estimating content validity. *Res Soc Administrative Pharm*. 2019; 15(2):214-221.

26. Yusoff MSB. ABC of content validation and content validity index calculation. *Educ Med J*. 2019;11(2):49-54.

27. Zijlmans EAO, Tijmstra J, Van der Ark LA, Sijtsma K. Item-score reliability as a selection tool in test construction. *Front Psychol*. 2019;9:419733.

28. Johnson RB, Christensen L. *Educational research: Quantitative, qualitative, and mixed approaches*. Sage publications; 2019.

29. Seçer I. *Psychological test development and adaptation process: SPSS and LISREL ap- plications*. 2nd ed. Anı Publishing; 2018.

30. Marsh HW, Guo J, Dicke T, Parker PD, Craven RG. Confirmatory factor analysis (CFA), exploratory structural equation modeling (ESEM), and set-ESEM: optimal balance between goodness of fit and parsimony. *Multivar Behav Res*. 2020;55(1):102-119.

31. Hajjar ST. Statistical analysis: internal-consistency reliability and construct validity. *Int J Quant Qual Res Methods*. 2018;6(1):27-38.

32. Ersig AL, Kleiber C, McCarthy AM, Hanrahan K. Validation of a clinically useful measure of children's state anxiety before medical procedures. *J Spec Pediatr Nurs*. 2013;18(4):311-319.

33. Heo M, Kim N, Faith MS. Statistical power as a function of cronbach alpha of instrument questionnaire items. *BMC Med Res Methodol*. 2015;15:86.

34. Shrestha N. Factor analysis as a tool for survey analysis. *Am J Appl Math Stat*. 2021;9(1):4-11.

35. Williams B, Onsman A, Brown T. Exploratory factor analysis: A five-step guide for novices. *Australas J Paramedicine*. 2010;8:1-13.

36. Yong AG, Pearce S. A beginner's guide to factor analysis: focusing on exploratory factor analysis. *Tutorials Quant Methods Psychol*. 2013;9(2): 79-94.

37. Goretzko D, Pham TTH, Bühner M. Exploratory factor analysis: current use, methodological developments and recommendations for good practice. *Curr Psychol*. 2021;40:3510-3521.

38. Worthington RL, Whittaker TA. Scale development research: A content analysis and recommendations for best practices. *Couns Psychol*. 2006;34(6):806-838.

39. Kline RB. *Principles and practice of structural equation modeling*. 4th ed. The Guilford Press; 2016.

40. DeVellis RF. *Scale development: Theory and applications*. 4th ed. Sage Publication; 2016.

41. Wang J, Wang X. *Structural equation modeling: Applications using Mplus*. 2nd ed. John Wiley & Sons; 2019.