

# A psychometric analysis of the adaptation of the integrative health and wellness assessment to Turkish

## Entegratif sağlık ve refah değerlendirmesinin Türkçe'ye uyarlama çalışmasına ilişkin psikometrik bir analiz

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### Abstract

Nurses/nurse coaches working in health promotion need tools that can be used to holistically assess the emotional, physical, nutritional, spiritual, etc. status of adults. The aim of this study was to perform a validity and reliability study for the Integrative Health and Wellness Assessment developed by the International Nurse Coach Association in 2011, (McElligott & Turnier, 2020) and to adapt it to Turkish culture. The research was performed from February-May 2023 with individuals who volunteered to participate. An online survey was sent to adult individuals over 18 years of age living in Türkiye. In total, data for 699 individuals were analyzed. Data collection tools included the information form and the Integrative Health and Wellness Assessment. For adaptation to Turkish, the steps prepared and refined in several studies by the World Health Organization were followed. Statistical analyses were performed with SPSS and R Project. Validity analyses included content and construct analyses, while reliability analyses used the Cronbach alpha and omega coefficients. The Kaiser-Meyer-Olkin value (KMO=0.936) was at acceptable levels and significant correlation structure was observed with Bartlett's sphericity test ( $\chi^2=6478.783$ ,  $p<0.001$ ). The results of factor analysis found item load values from 0.859-0.522 for 31 items in a structure of 6 subdimensions (emotional awareness, health responsibility, nutrition, exercise, spiritual and avoiding harmful habits). This structure explained 64.929% of the total variance. As a result of the analyses, the scale is suitable for use to assess the integrative health and wellness of adult individuals and the Turkish form was concluded to be valid and reliable.

**Keywords:** Integrative health, wellness, validity, reliability, nursing

### Özet

Sağlığı geliştirmek ve teşvik etmek için çalışan hemşireler/hemşire koçları, yetişkin bireylerin duygusal, fiziksel, beslenme, spritüel v.s durumunu bütünsel olarak değerlendirmek için kullanılacak araçlara ihtiyaç duyarlar. Bu çalışmanın amacı, 2011 yılında Uluslararası Hemşire Koçları Derneği tarafından geliştirilen Bütünsel Sağlık ve Zindelik Değerlendirmesi'nin geçerlik ve güvenilirlik çalışmasını yapmak (McElligott & Turnier, 2020) ve Türk kültürüne uyarlamaktır. Araştırma, Şubat-Mayıs 2023 tarihleri arasında gönüllü olarak katılan bireylerle gerçekleştirilmiştir. Türkiye'de yaşayan 18 yaş üstü yetişkin bireylere çevrimiçi anket gönderilmiştir. Toplamda 699 bireyin verileri analiz edilmiştir. Veri toplama araçları bilgi formu ve Bütünsel Sağlık ve Zindelik Değerlendirmesi'dir. Türkçeye uyarlama için Dünya Sağlık Örgütü'nün çeşitli çalışmalarında hazırlayıp geliştirdiği adımlar izlenmiştir. İstatistiksel analizler SPSS ve R Projesi ile yapılmıştır. Geçerlik analizlerinde içerik ve yapı analizleri yapılmış, güvenilirlik analizlerinde ise Cronbach alfa ve omega katsayıları kullanılmıştır. Kaiser-Meyer-Olkin değeri (KMO=0,936) kabul edilebilir düzeyde olup, Bartlett'in küresellik testi ile anlamlı korelasyon yapısı gözlenmiştir ( $\chi^2=6478,783$ ,  $p<0,001$ ). Faktör analizi sonucunda 6 alt boyutlu yapıda (duygusal farkındalık, sağlık sorumluluğu, beslenme, egzersiz, maneviyat ve zararlı alışkanlıklardan kaçınma) 31 madde için madde yük değerleri 0,859-0,522 arasında bulunmuştur. Bu yapı toplam varyansın %64,929'unu açıklamaktadır. Analizler sonucunda ölçeğin yetişkin bireylerin bütüncül sağlık ve iyilik halini değerlendirmek için kullanılmaya uygun olduğu ve Türkçe formunun geçerli ve güvenilir olduğu sonucuna varılmıştır.

**Anahtar Kelimeler:** Bütünleştirici sağlık, sağlıklı yaşam, geçerlilik, güvenilirlik, hemşirelik

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## Introduction

In their 1948 definition of health, the World Health Organization (WHO) emphasized that health was not just the absence of disease or disability but also full physical, mental and social wellness. The National Center for Complementary and Integrative Health defines the term integrative health to include complementary approaches to mainstream health services (1). Integrative health represents an approach to lifelong individual and social health and deals with the interrelations between all areas related to health including body, mind and spirit. At the same time, it is accepted that health is shaped not just by health services but by elements like personal behavior, genetic factors and protective and risk factors (e.g., economic status, reaction to stress and working conditions). Integrative health is accepted as being affected by factors impacting health, physical, social and economic environment, in addition to environmental and social conditions, state policies and social values. Additionally, considering evidence-based information, integrative health advocates for person-based health services involving appropriate health professionals, different disciplines, traditional healing methods and therapeutic approaches (2).

The term "wellness" was first defined in the literature in a book called High Level Wellness as an integrated approach focused on bringing the potential of individuals to the highest level. Wellness is a concept related to all aspects of life; physical health, social interactions, emotional and mental capacity and spirituality, etc. Perceived wellness represents a reflection of general health levels, in addition to the special needs of the person (3). Wellness does not aim to replace existing health practices but rather to complement them. Nearly all wellness practices serve well-being rather than medical needs. In this context,

the integrative health and wellness understanding gains an important role within nursing practice. Nurse coaching, emerging as an innovative health-developing intervention to improve health behavior and increase self-management of chronic disease, has taken its place as an innovative approach to the concept of integrative health. Nurse coaches facilitate individuals' healing and well-being by utilizing coaching principles and integrative healing methods that encompass the body, mind, emotions, spirit, and environment (4). A professional nurse coach integrates coaching competencies into any area of nursing practice to assist individuals and/or groups in realizing their potential and to facilitate the process of change or development. The process of change is based on the inner awareness developed by the individual before it manifests externally and is sustained as effective change (4, 5). In Türkiye, coaching was officially recognized as a profession in the Official Gazette dated June 29, 2013, and numbered 28692 (6). In Türkiye, some institutions, organizations, and universities organize certificate programs under the titles of life coaching, health coaching, and diabetes nurse coaching at predetermined times. These programs provide certification to nurses and healthcare professionals who wish to work in these fields. Additionally, there are nurses in Türkiye who serve as holistic nurse coaches (7, 8). Nurses working as coaches, especially, must use an integrative approach when working with a client/patient. At this point, nurses/nurse coaches working to develop and encourage health require tools that they can use to assess the status of individuals. Using these tools also supports evidence-based implementations in nursing practice. Evidence-based tools are required to develop nursing/coaching assessment

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and to facilitate client-coach interviews through in-depth thought and additionally assist in developing and measuring action-focused goals (9). While diverse scales measure health (10-13) and wellness (12), in Türkiye there is no scale tool assessing integrative health and wellness and supporting self-reflection and assessment as defined by the theory of integrative nurse coaching (TINC). The role of the nurse coach is to develop with each day to meet needs in relation to health and welfare in our country and the world. At this point, there is a need to adapt the valid and reliable Integrative Health and Wellness Assessment (IHWA) to Turkish society for use when coaching clients and hence, this study was performed. The aim of this research is to perform a validity and reliability study for the Integrative Health and Wellness Assessment developed adapt it to Turkish culture.

## Material and Method

### Research type

This study was methodological research with the aim of testing the validity and reliability of the Integrative Health and Wellness Assessment at Turkish culture.

### Participants

The sample for the research comprised literate individuals older than 18 years who volunteered to participate in the research from February-May 2023. The sample number for the scale development study was determined to be 699 people, volunteering for the study, based on the need for the sample to include 5-10 times the number of items on the scale on average and as data would be divided in two for exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) (13). Participants were reached online through e-mail and social media. Online questionnaires were distributed to the participants and no personal identity information was solicited. It was explicitly communicated in writing to all participants that their responses would be exclusively utilized for the purposes of this research, and not for any other context.

### Data Collection

As data collection tools, an information form and the Integrative Health and Wellness Assessment were used.

**Information form:** This was prepared by the

researchers and included 10 questions about sociodemographic features. Questions were related to sex, age, weight, height, educational status, marital status, and income level of participants, how they perceived their health, whether they thought they were healthy considered as a whole and presence of chronic disease.

**Integrative Health and Wellness Scale (IHWA):** The IHWA, developed in 2011, was based on a self-assessment tool initially developed by Lynn Keegan and Barbara Dossey (1988), the Theory of Integral Nursing (14), and the Theory of Integrative Nurse Coaching (TINC) (15). The initial self-assessment tool reviewed six areas of wellness: physical, mental, emotions, spirit, relationships, and choices (14,16) and was refined over the past 23 years based on respondent feedback and content experts in holistic nursing.

While various tools measured health and wellness, there were no tools that measured health and wellness as defined by the TINC. Therefore, the IHWA tool was developed to support self-assessment and self-reflection on the eight dimensions of wellness defined by the TINC. These dimensions include (1) life balance and satisfaction, (2) relationships, (3) spiritual, (4) mental, (5) emotional, (6) physical (nutrition, exercise, weight management), (7) environmental, and (8) health responsibility (15).

The 36-item short form of the Integrative Health and Wellness Scale was developed by McElligott et al. (10). The IHWA assists in assessing health behavior through self-reflection and provides information for the coaching relationship. The short form takes about 10 minutes to complete, uses a 5-point Likert-type scale ranging from 1 (never) to 5 (always) and is scored by adding up the total for each area with higher scores indicating higher levels of wellness. Total scores on the 36-item IHWA tool can range from 36 to 180.

### Translation of the Original Integrative Health and Wellness Assessment into Turkish-Adaptation process

Before the adaptation of the IHWA, permission to use the scale was obtained via e-mail from the researchers who developed the scale. The adaptation process followed the steps prepared and refined in several studies by the WHO (17, 18).

**1. Translation:** Translation was completed independently by two experts with native Turkish and good level of English. The experts were academics in health sciences faculties and were familiar with the terminology of the scale (19, 20). One expert was informed about the topic, while the other was not. The topic, aim and things required were explained to the informed translator. The other translator was requested to translate naturally without bias (21). After the translation was complete, both versions were summarized and translations were compared to create a common text. Semantic, idiomatic, conceptual, linguistic and contextual differences were assessed (22).

**2. Semantic Explanations:** Considering differences in linguistic and cultural structures, scale items were revised for suitability for Turkish society (18).

**3. Expert panel:** The aim of this step is to identify and resolve inadequate statements in the translation and inconsistencies between the two languages (17, 23). In line with the recommendation by WHO, the original scale and translation were sent to four experts after the translation process. Here, experts were identified as people who knew both languages and cultures, scale content and scale adaptation methods (18). Experts were requested to respond to each item with responses of “unsuitable (1)”, “item should be adapted for suitability (2)”, “suitable but requires small changes (3)” and “very suitable (4)”. Responses from experts are interpreted as having good CVI score if 80% of all items have scores of 3 and 4 (12). In line with the responses from the four experts, 96% of items had scores of 3 and 4.

**4. Retranslation:** The retranslation was made by 2 independent translators who knew Turkish but whose native language was English, not included in the first translation and with no information about the scale (20, 21). After completing the retranslation process, the researchers compared the two versions to determine differences between the retranslation and the original scale. Small grammar differences were ignored. Analysis by the researchers and translators did not identify any semantic differences in the scale items and the translation was satisfactory.

**5. Pilot Application and Cognitive Review:**

The pilot application was completed with 30 people with similar characteristics to the target group, in line with recommendations made by WHO. Participants were requested to reach the questions aloud, make a short explanation about the meaning of each item and rate it. The aim was to be sure that each item on the scale was understood in the same way by each participant (22). After the pilot application, no changes were made to the scale. It was determined that the demographic feature questionnaire and the Turkish form of the IHWA can be answered within 8–10 minutes. Individuals participating in the pilot application were not included in the sample.

**6. Final Version:** The final version of the Turkish scale was obtained after these five stages.

**7. Documentation:** The adaptation process for the scale is reported based on WHO recommendations (17).

The Likert graph allowing participants to state how much they agree or disagree with a certain item is shown in Figure 1.

### Statistical Analysis

The evaluation of the demographic characteristics of the individuals participating in the study was performed with the SPSS (Statistical Package for Social Sciences) 27.0 package program.

### Exploratory Factor Analysis and Confirmatory Factor Analysis of the Integrative Health and Wellness Assessment

Exploratory factor analysis (EFA) was implemented using principal axis factoring and varimax rotation techniques to check the sub-dimensions of the Integrative Health and Wellness Scale. While implementing EFA, Pearson correlation matrix was chosen (12).

Reliability was assessed utilizing Cronbach Alpha, omega and inter-reliability (ICC) coefficients. After EFA and reliability analyses, confirmatory factor analysis (CFA) was performed to validate the obtained structure. The first 350 observations in the dataset were used for EFA (24). For CFA, construct validity was examined for the remaining sample set of 349 observations. Analyses were performed with R Software (25). Also, the psych package was used for reliability and EFA (26), while the Lavaan package was used for CFA (15). Analysis of data used the IBM SPSS 27 and R-Project (IBM Corp. Released, 2021, 26) programs.



### Ethical Approval

This study, with participation on a voluntary basis, was conducted in accordance with all ethical procedures/standards and the Declaration of

Helsinki. The study was approved by Yildirim Beyazit University Health Science Ethics Committee (Research code: 2022:1132, Approval number: 06.10.2022-14).

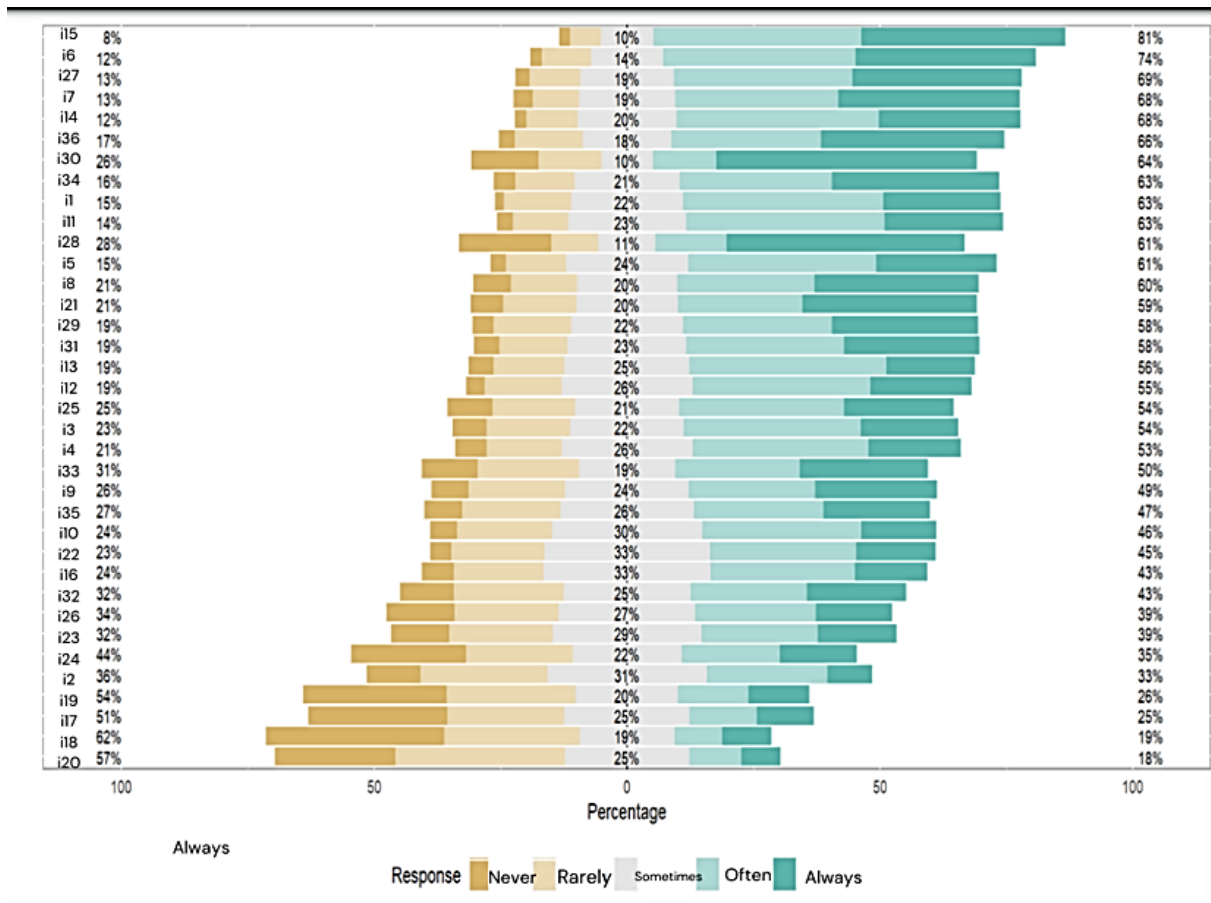


Figure 1: Likert graph for participant responses to items on the Integrative Health and Wellness Assessment

### Results

The results obtained from the validity and reliability study of the IHWA are investigated under three headings of descriptive features of participants, validity findings and reliability findings.

#### 3.1. Descriptive features of individuals

The demographic features of participants are shown in Table 1. The mean age of individuals was

29.49±10.19 years, mean weight 65.64±13.81 kg, and mean height 164.60±14.80 cm. Of participants, 84.7% were women. Among participants, 61.8% were university graduates and 20.6% had received postgraduate education. Of participants, 56.5% were single, 50.6% had income equal to expenditure, 51.2% stated they were healthy overall and 20.7% had chronic disease (Table 1).

Table 1: Demographic features of individuals

Demographic Information		n	%
Sex	Woman	592	84.7
	Man	107	15.3
Education	Primary education	14	2.0
	High school	109	15.6
	University	432	61.8
	Postgraduate	144	20.6
Marital status	Married	304	43.5
	Single	395	56.5

<b>Income</b>	Income less than expenditure	203	29.0
	Income equal to expenditure	354	50.6
	Income more than expenditure	142	20.4
<b>General health</b>	Good	385	55.0
	Moderate	270	38.6
	Poor	44	6.4
<b>State of being healthy overall</b>	Yes	358	51.2
	No	341	48.8
<b>Chronic disease</b>	Yes	145	20.7
	No	554	79.3

## 3.2. Validity

### 3.2.1. Exploratory Factor Analysis

In the study, EFA was first conducted to evaluate the construct validity of the scale, followed by CFA to test the validity of the confirmed factor structure. According to the preliminary results for EFA, Bartlett's test of sphericity was significant ( $\chi^2=6478.783$ ,  $sd=465$ ,  $p<0.001$ ) and the Kaiser-Meyer-Olkin test sampling the adequacy value ( $KMO=0.936>0.900$ ) was quite high. The number of factors was selected with the Kaiser rule based on the correlation matrix.

When the factor analysis results are assessed, a structure with 6 factors with eigenvalues greater than 1 was obtained. It is expected that the difference between the highest load value for an item in one factor and the highest load value for the same item in any other factor will be high and it is recommended that this difference be at least 0.15 (27). According to the EFA results, the factor

load values for two items were identified to be very close to each other in two separate factors (item 10: 0.548 and 0.467; item 27: 0.460 and 0.444).

After removing the two items, EFA was repeated for 34 scale items. According to the result, the factor load values for three items had very close values in two separate factors (item 7: 0.585 and 0.471; item 25: 0.574 and 0.466; item 26:0.579 and 0.446). Three scale items were removed and the factor analysis results for the 31-item scale are presented in Table 2. The load values for all items within the factors were higher than 0.40 (27). After the five items were removed from the analysis, the factor loads for the remaining items had differences greater than 0.15, so the final EFA results did not have a cross load problem (25). For all items, the communality values were higher than 0.30 (28). The result of factor analysis found a 6-factor structure, different to the original scale, that appeared to explain 64.929% of the total variance (Table 2).

**Table 2:** Factor loads and communality values for EFA results

Item no.	Factor-1	Factor-2	Factor-3	Factor-4	Factor-5	Factor-6	Communality
15	0.752						0.651
6	0.724						0.610
14	0.702						0.601
5	0.691						0.618
12	0.635						0.591
4	0.631						0.603
13	0.628						0.599
1	0.626						0.567
11	0.600						0.582
3	0.591						0.543
16	0.559						0.589
34		0.806					0.781
33		0.792					0.702

35		0.721					0.771
36		0.640					0.673
31		0.604					0.674
32		0.537					0.521
29		0.516					0.597
21		0.432					0.497
24			0.707				0.555
22			0.679				0.746
23			0.653				0.618
20			0.508				0.517
18				0.870			0.836
19				0.804			0.743
17				0.794			0.785
9					0.800		0.782
8					0.715		0.711
2					0.469		0.566
28						0.803	0.737
30						0.799	0.749
% variance explained	19.137	9.442	13.532	6.892	9.676	6.248	Total Experienced Variance 64.929

VER: Variance explanation rate

### 3.2.2. Confirmatory factor analysis (CFA)

The CFA results related to factor loads and t values for scale items obtained for research data from the second sample are presented in Figure 2. When the

factor loads for the scale are examined, there was no item below 0.30 and factor load were between 0.93 and 0.51 within acceptable limits (Figure 2).

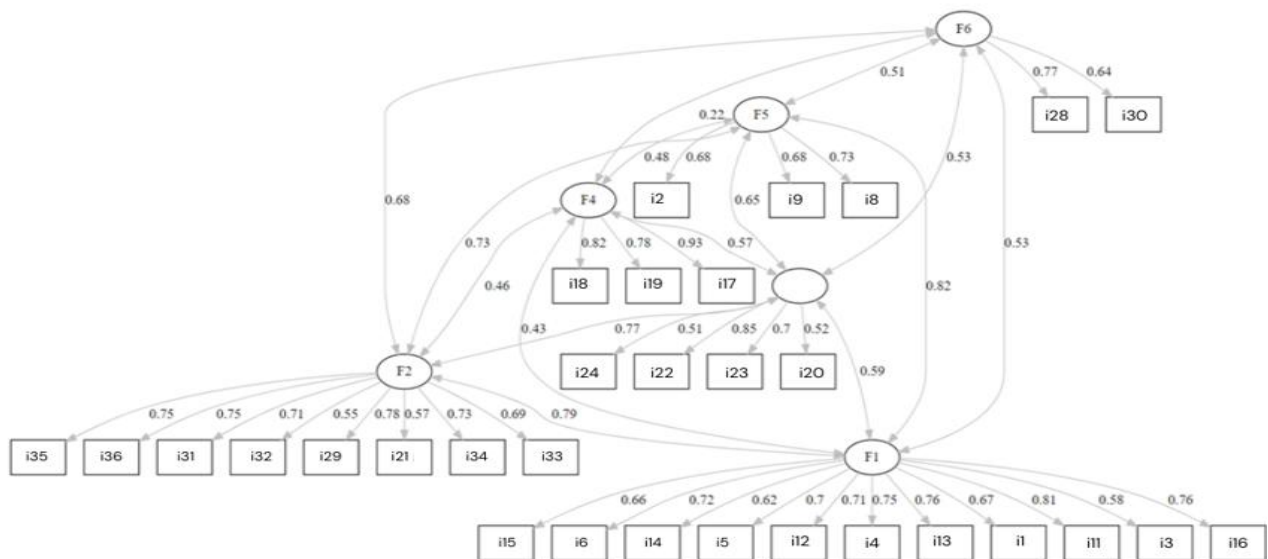


Figure 2: CFA results

Table 3 shows the standardized factor loads and significance results for all items in the six subdimensions obtained from the CFA results. According to these results, all items on the scale were collected in the subdimensions in a statistically significant way ( $p < 0.05$ ) and standardized factor

loads were positive. The load values obtained from CFA results were positive and significant indicating that all items were correctly located in the subdimensions in terms of construct validity. When the t statistics related to the items are investigated, all items were significant at 0.01 levels (Table 3).

**Table 3:** Factor load statistics for items as a result of CFA

Factor	Item		Standardized factor load	p
Emotional awareness	15	I listen to other people's feelings and respect them.	0.655	<0.001
	6	I easily express my love and concern for people I care about.	0.716	<0.001
	14	I try to be forgiving.	0.618	<0.001
	5	I express my feelings for others in appropriate ways.	0.702	<0.001
	12	I want help/support when needed.	0.709	<0.001
	4	I am comfortable sharing my feelings/thoughts without feeling guilty.	0.746	<0.001
	13	I accept situations and events outside of my control.	0.763	<0.001
	1	I am satisfied with the integration between my job, my family, my friends and myself.	0.667	<0.001
	11	I determine realistic targets for my job.	0.813	<0.001
	3	I have satisfactory relationships.	0.580	<0.001
Health responsibility	16	I can healthily distance myself from unwanted feelings (anxiety, worry, fear and anger).	0.763	<0.001
	34	I am aware of my risk factors for illness.	0.730	<0.001
	33	I know my blood pressure, triglyceride, cholesterol and glucose levels.	0.693	<0.001
	35	I am interested in developing my health plan (health screening, drugs, supplements, exercise, nutrition, etc.)	0.755	<0.001
	36	I know I am the key to my general health and fitness.	0.752	<0.001
	31	I investigate extraordinary physical signs or symptoms when they occur.	0.708	<0.001
	32	Every night I have 7 hours or more of quality sleep.	0.551	<0.001
	29	I can do my activities in daily life and I can work.	0.775	<0.001
Nutrition	21	I drink 6-8 glasses of water per day.	0.572	<0.001
	24	I preserve my weight at what I think is my ideal weight.	0.514	<0.001
	22	I consume healthy foods (e.g., whole, unprocessed, organic).	0.846	<0.001
	23	I eat with awareness (focus on food and am not busy with other things or I don't eat in front of the television).	0.698	<0.001
Exercise	20	I eat at least 5 portions of fruit and vegetables per day.	0.523	<0.005
	18	I do muscle strengthening activities for all major muscle groups (legs, back, trunk, shoulders, arms) on 2 or more days per week (e.g., free weights, machines, resistance bands, body weight exercises or lifting heavy loads).	0.820	<0.001
	19	I perform moderate intensity aerobic activity for at least 150 minutes (2 hours and 30 minutes) at least once per week (e.g., fast walking or any activity that requires heavier breathing with increased heart rate).	0.775	<0.001
	17	I do stretching or flexibility activities on 2 or more days per week.	0.931	<0.001



Spiritual	9	I spend time on affirmations, prayer and meditation.	0.682	<0.001
	8	I feel linked to a higher power.	0.725	<0.001
	2	I use daily strategies to manage stress (like breathing, stretching, relaxation, meditation and daydreaming).	0.676	<0.001
Avoiding harmful habits	28	I have no addiction to any substance or behavior (alcohol, nicotine, drugs, sex, food, gambling, shopping, exercise, internet).	0.766	<0.001
	30	I avoid smoking, using electronic cigarettes or inhaling harmful substances into my lungs.	0.636	<0.001

The model fit indexes for CFA for  $\chi^2/df$ , RMSEA, CFI, TLI, NFI, GFI and AGFI show perfect fit and the construct validity for the Integrated Health and Wellness Assessment was confirmed (Table 4). Table 4 gives the goodness of fit indexes for the CFA findings from the scale. The calculated  $\chi^2/SD$  ratio

was 1.109841, which is below 2. All the GFI=0.983, CFI=1, AGFI=0.980, TLI=1, and NNFI=1 index results obtained as a result of CFA for the 6-factor scale were above 0.9. RMSEA=0.018 is below 0.05.

**Table 4:** Goodness of fit indexes for CFA results

$\chi^2$	SD	( $\chi^2/SD$ )	GFI	CFI	AGFI	TLI	NNFI	RMSEA
465.023	419	1.109841	0.983	1	0.980	1	1	0.018

### 3.3. Reliability

According to the reliability analysis, all items had positive corrected item-total correlations, and while the removal of two specific items (item2, item 21) led to a minor increase in Cronbach's alpha values, this increase was deemed negligible. Given the already high reliability coefficients and to preserve the coherence and integrity of the scale, no items were removed (Table 5). In our study, the Cronbach

alpha reliability coefficient value were calculated to assess the internal consistency reliability of the scale and the internal consistency coefficient was  $\alpha=0.946$  for the whole scale. For the emotional awareness dimension, these values were  $\alpha=0.916$ , for health responsibility  $\alpha=0.898$ , for nutrition  $\alpha=0.772$ , for exercise  $\alpha=0.876$ , for stress/spiritual  $\alpha=0.762$ , and for avoiding harmful habits  $\alpha=0.715$  (Table 5).

**Table 5:** Descriptive statistics and reliability analysis results

Item	Scale dimension	Mean $\pm$ SD	Corrected item correlation	Alpha when item removed	Alpha
15	Emotional awareness	4.085 $\pm$ 0.956	0.728	0.907	0.916
6		3.948 $\pm$ 0.973	0.707	0.908	
14		3.765 $\pm$ 1.008	0.674	0.910	
5		3.660 $\pm$ 0.981	0.732	0.907	
12		3.520 $\pm$ 1.058	0.712	0.908	
4		3.437 $\pm$ 1.089	0.700	0.909	
13		3.454 $\pm$ 1.068	0.742	0.906	
1		3.668 $\pm$ 0.947	0.711	0.908	
11		3.677 $\pm$ 0.976	0.726	0.907	
3		3.460 $\pm$ 1.09	0.671	0.910	
16		3.194 $\pm$ 1.058	0.698	0.908	

34	Health responsibility	3.740±1.098	0.824	0.877	0.898
33		3.360±1.298	0.737	0.885	
35		3.325±1.188	0.845	0.874	
36		3.817±1.102	0.763	0.883	
31		3.608±1.111	0.757	0.882	
32		3.148±1.22	0.617	0.895	
29		3.614±1.113	0.718	0.886	
21		3.637±1.249	0.559	0.900	
24	Nutrition	2.894±1.310	0.585	0.757	0.772
22		3.311±1.05	0.770	0.672	
23		3.088±1.192	0.720	0.690	
20		2.420±1.888	0.583	0.751	
18	Exercise	2.400±1.345	0.876	0.774	0.876
19		2.608±1.357	0.772	0.860	
17		2.688±1.340	0.804	0.838	
9	Spiritual	3.812±1.027	0.691	0.647	0.762
8		4.114±0.964	0.685	0.661	
2		3.266±1.106	0.528	0.830	
28	Avoiding harmful habits	3.645±1.523	3.645	0.565	0.715
30		3.702±1.499	3.702	0.548	

SD: Standard deviation, alpha: Cronbach alpha reliability coefficient.

## Discussion

In this study, validity and reliability studies were performed for Turkish culture for the short-form 36-item Integrated Health and Wellness Assessment was developed by McElligott et al. (10).

Before suggesting that a new scale is ready to collect data, a pilot study should be performed. It is necessary to perform the pilot application with a group with the same features as the sample (29). In line with this information, interviews were held with 30 participants with the same features (in terms age and gender) as the target group, who voluntarily accepted participation in the research. As a result of the pilot application, there was no item which could not be understood, so scope validity was ensured without changing any of the scale items.

With the aim of determining the construct validity, data were divided in two (50:50 ratio) and EFA and CFA were performed (9). In the study, EFA was first conducted to evaluate the construct validity of the scale, followed by CFA to test the validity of the confirmed factor structure. With the aim of determining the suitability of data for factor

analysis, the KMO and Bartlett tests were used. If the KMO value is above 0.60 and the Bartlett test is significant, the data is suitable for factor analysis (30). According to the KMO sample suitability value of 0.936 and the Bartlett sphericity test, there was a statistically significant correlation structure between the items and the data were suitable for factor analysis.

The six factors obtained according to Horn's parallel method explained 64.929% of the total variance. As this rate was above 50%, it indicates the EFA results are adequate (31). This rate shows that the scale items can be accepted as they are within the expected explanation percentage rates. As a result of EFA, the difference between factor loads was smaller than 0.15, so there was no cross-load problem in the final EFA results (32). The communality values for all items were above 0.40. When the EFA results are assessed in general, it was concluded that the scale items can be collected accurately in statistical terms in six subscales. Items with item-total correlations of 0.40 and above show that they are able to measure the

desired feature (27). The factor loads for the scale, targeted for development, were higher than 0.40, which indicates it is able to measure the feature of the subscale in which the items are included.

When CFA is performed, it is recommended to examine several goodness of fit indexes, factor loads, and t statistics and then create a path diagram. When goodness of fit indexes are investigated,  $X^2/df$ , CFI, GFI, AGFI, TLI, NFI and RMSEA should be at the desired levels.  $X^2/df$  criterion of 3 or less, CFI criterion of 0.95 and above, NFI criterion of 0.95 and above, GFI, AGFI and TLI criteria of 0.90 and above, and RMSEA criterion of 0.05 or less are assessed as perfect fit (33, 34). When the path diagram is investigated, the 31-item and 6-subdimension scale structure had good fit.

Reliability shows a scale makes accurate measurements without errors (33). In this study, to measure internal consistency in the reliability analysis, the Cronbach alpha and omega coefficient methods were used. In adaptation studies for Likert-type scales, the Cronbach alpha coefficient is frequently used to determine the homogeneity of the scale and all subdimensions of the scale (35). In scales with multiple factors, it is recommended to calculate the omega reliability coefficient as an alternative to the Cronbach alpha values (36). The Cronbach alpha ( $\alpha$ ) coefficient values are assessed as not reliable from 0.00-0.40, low reliability from 0.40-0.60, very reliable from 0.60-0.80 and high degree of reliability for 0.80-1.00 (36, 37). In line with this information, the Cronbach alpha coefficients for the scale subdimensions were from 0.715 to 0.916. Thus, the Cronbach alpha coefficients for the IHWA were above 0.80 indicating high degree of reliability and the Cronbach alpha and omega coefficients for the subdimensions of the scale were above 0.60 indicating a very reliable scale.

When the Cronbach alpha values for the scale subdimensions are examined, the values were  $\alpha=0.916$  for emotional awareness related to integrative health and wellness,  $\alpha=0.898$  for health responsibility,  $\alpha=0.772$  for nutrition,  $\alpha=0.876$  for exercise,  $\alpha=0.762$  for spiritual and  $\alpha=0.715$  for avoiding harmful habits. Generally if the Cronbach alpha coefficient is 0.65 and above, it is accepted as sufficient (38, 39).

In our study, the original scale was adapted to

Turkish society with different item and subdimension numbers. The items were collected in factor 1 emotional awareness (items 15, 6, 14, 5, 12, 4, 13, 1, 11, 3, 16), factor 2 health responsibility (items 34, 33, 35, 36, 31, 32, 29,21), factor 3 nutrition (items 24, 22, 23, 20), factor 4 exercise (items 18, 19, 17), factor 5 spiritual (items 9, 8, 2) and factor 6 avoiding harmful habits (items 28, 30). The subdimensions were renamed by paying attention to the items included in them.

## Conclusions

In conclusion, the results of this study aiming to adapt the Integrative Health and Wellness Assessment for Turkish society determined that the Turkish version of the Integrative Health and Wellness Assessment was a valid and reliable scale containing 31 items in 6 subdimensions. This scale, adapted for Turkish adult individuals, may be an important assessment tool providing information about their health and wellness. The scale is specifically designed for use with adult individuals and is thought to be particularly beneficial for nurses, nurse coaches, and postgraduate students in nursing. In line with the results of the research, researchers planning studies related to the topic are recommended to perform studies with larger and more diverse sample groups (e.g., individuals with chronic diseases, students, health employees, etc.) and compare these findings with the research results. Additionally, repeating the study with a broader age range and more homogeneous sociodemographic groups is suggested to further evaluate the scale's generalizability and applicability across different populations

## Limitations of the Study

The limitations of the study include the fact that the majority of the respondents were young and the sociodemographic characteristics were heterogeneous.

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