

## Research Article

# Health Risk Behaviours in Turkish Adolescents: Validation of the Health Risk Scale

Behice Erci<sup>1\*</sup>, Sibel Öztürk<sup>2</sup>, and Esra Yıldız<sup>2</sup><sup>1</sup>Department of Nursing, İnönü University, Turkey<sup>2</sup>Department of Nursing, Atatürk University, Turkey

## \*Corresponding author

Behice Erci, Department of Nursing, İnönü University, Malatya, Sağlık Bilimleri Fakültesi, Hemşirelik Bölümü, Malatya, Türkiye, Email: behiceerci@hotmail.com

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## Abstract

Many health risk behaviours are acquired during adolescence and continue during adulthood, thereby affecting later health. The aim of this study was to adapt the Health Risk Scale to the Turkish language and cultural and to assess the validity and the reliability. A convenience sample of 436 undergraduate students was recruited from a university in Turkey. The researchers visited departments of the university on five working days in every week and conducted interviews with the students. In the assessment of construct validity, there were identified six factors with eigenvalues greater than 1 explained 59.8% of the total variance (Diet, Anger and stress, Prevention care, Medical compliance, Substance use and Beliefs about masculinity). Factor analysis yielded that all of factor loadings of the items ranged from 0.43 to 0.80 in the scales. Internal reliability coefficients of these six factors ranged from 0.60 to 0.75. The present study provides evidence of the health risk scale's validity, reliability and acceptability in Turkish adolescent. This scale should be further evaluated in different regions in Turkey and diverse populations. The scale has potential applications as it can be used both as a research or a regular health risk behaviours tool with primary health care settings.

## INTRODUCTION

Adolescence is a period of rapid development when young people acquire new capacities and are faced with many new situations. This period presents not only opportunities for progress but also risks to health and well-being [1]. Adolescents are generally thought to be healthy; by the second decade of life, they have survived the diseases of early childhood, and the health problems associated with ageing are still many years away. Yet many adolescents do die prematurely. Preventable risk behaviours such as fighting, substance abuse, reckless driving, and violent behaviour significantly contribute to adolescent morbidity and mortality [2]. These behaviours threaten the well-being of teens and limit their potential for achieving responsible adulthood [3].

The concept of "risk behaviour" applies to specific forms of inappropriate problem handling. Risk behaviour is understood to be behaviour with undesirable consequences that go hand in hand with a probability of harm or loss [4]. Although there is no clear consensus in the literature about the definition or the key elements that are encompassed in the concept of risk behaviour, it is generally agreed upon that such behaviours are those that are directly or indirectly associated with health, well-being, and the healthy development of personality; for instance, substance use, delinquency, unhealthy dietary behaviour, and inadequate

psychosocial adjustment. But psychological impairments such as depression, bulimia, and anorexia nervosa can also be considered as risk behaviours [5]. These adverse outcomes can have enduring consequences at considerable cost to individuals, families, and the wider community because many health problems of adulthood have their origins in behavioural patterns that are formed during adolescence. Furthermore, adolescence is a time when coping styles begin to consolidate. Habits and lifestyles formed during these years are likely to continue throughout life. In addition, during adolescence and young adulthood, many consequential life decisions are made concerning educational attainment, occupational choices, relationship and family formation, and lifestyle options, making adolescence an important formative period likely to yield long term benefits of health promoting efforts [6].

Many health risk behaviours are acquired during adolescence and continue during adulthood, thereby affecting later health [7-10]. Since today's youngsters represent the future adult population, prevention of chronic diseases focussing on health risk behaviours of adolescents is warranted [11].

The health-related behaviours most commonly studied in adolescents and young adults are nutrition, exercise, hygiene practices, sleeping patterns, alcohol, drug and tobacco use, sexual and contraceptive behaviour, and seat belt use [12]. Most

of the studies deal with either one specific health behaviour, or a limited group of behaviours such as eating, sleeping, exercise and safety patterns [12].

Trends in health care place increased emphasis on health and health promotion, self-care promotion and disease prevention through advocacy of healthy lifestyles [13]. In order for health professionals to understand better health risk behaviours and health promotion of adolescent, adaptation of a scale measuring health risk regarding is important for health promotion and prevention initiatives. Health care researchers who work with culturally diverse communities need to be aware that the measurement of health risk may vary in different cultural groups. Therefore, the health risk scale may be the best representation of the theoretical constructs of health risk behaviours from a Turkish perspective, and thus may be culturally sensitive.

## AIM

The aim of this study was to adapt the Health Risk Scale to the Turkish language and cultural and to assess the validity and the reliability of the Turkish version.

## METHODS

### Design

The research was a psychometric study and was carried out in 2014. The phases of the study were: (1) translation into the Turkish language from the English version and back-translation into English; (2) content analysis by a panel of specialists; and (3) pre-test and psychometric testing factor analysis, a reliability coefficient and inter-item correlations

### Participants

A convenience sample of 436 undergraduate students, ranging in age from 18 to 25 years was recruited from a university in Turkey. G-Power software program for windows was used to determine sample size of the study [14]. There was not eligibility criterion for the participants.

### Translation procedures

In the first instance, the health risk scale was translated into Turkish. The Turkish version was then translated into English by two Turkish lecturers, who worked independently on the translation. The lecturers both worked as professors who teach English language at the university. The two translated versions were compared by the author and analysed until there was a consensus about the initial translation. Their initial translation into Turkish was back-translated into English. The translation phase had the purpose of checking for discrepancies between the content and meaning of the original version and the translated instrument. All of the versions were evaluated by the author and a final version was formed.

### Content validity

To test item clarity and content validity, the translated version was submitted to a panel of five specialists. They were informed about the measures and concepts involved by the author. This multidisciplinary panel comprised three public health specialists, two experts who had conducted research on health behaviours.

Each of the panel members was asked to evaluate the content of the final translated version of the health risk scale compared to the original instrument. The experts were asked to evaluate each item at the scale using a 5-point Likert Scale: from 5 (always) to 4 (almost time), 3 (sometime), 2 (nearly), 1 (never).

### Pre-test

The final version of the translated instrument was pre-tested with a pilot group of 30 students from the university. The pre-test was conducted at departments of the university where the main study was to be carried out. To simplify the recording of doubts and suggestions about the scale, a questionnaire was used, requesting general information from the interviewee, such as gender, age, marital status and monthly income. An open-ended question to record doubts and suggestions was provided for each of the items.

### Data collection

The researcher visited departments of the university on five working days in every week and conducted interviews with the students. The questionnaire was explained to the participants, who then read it and marked their answers on the sheets. The questionnaire took approximately 20 minutes to complete and could be understood by people with minimal reading ability. Students were asked to complete the surveys in class.

### Ethical considerations

The study was approved by the ethics committee at the Health Science Faculty of the University and informed consent was obtained from each participant. The students were informed about the purpose of the research, and assured of their right to refuse to participate or to withdraw from the study at any stage. Anonymity and confidentiality were guaranteed.

### Data analysis

Internal consistency and homogeneity Cronbach's alpha was calculated to determine internal consistency. Clark and Watson [15] indicated that internal consistency may be a necessary condition for homogeneity or unidimensionality of a scale and Cronbach's alpha should be 0.70 or higher. Item-total correlations and mean inter-item correlations were included in the analysis. Clark and Watson [15] recommend using the inter-item correlation as a criterion for internal consistency. This should be 0.15 or higher for independent and dependent samples of 0.30 and above.

### Construct validity

The data were analysed using factor analysis (principal component analysis and varimax rotation). To attain the best fitting structure and the appropriate number of factors, the following criteria were used: eigenvalues higher than 1.0, factor loadings higher than 0.40 and the so-called elbow criterion for the eigenvalues [16]. Before conducting the factor analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test were calculated to evaluate whether the sample was large enough to perform a satisfactory factor analysis. The KMO measures the sampling adequacy and the P value should be greater than 0.05 for a satisfactory factor analysis to proceed.

**Table 1:** Distribution of demographic characteristics (n: 436).

Characteristics	N	%
Gender		
Female	261	59.9
Male	175	40.1
Marital status		
Married	10	2.3
Single	426	97.7
	Mean	SD
Age (year)	21.12	3.0
Monthly income (TL)	369.82	253.91

## RESULTS

### Participant demographics

The demographic characteristics of the participants were shown in Table (1). The mean age was 21.12 (SD: 3.0) years. The majority of the sample was single, 59.9% were female. Their mean monthly income was 369.82 (SD: 253.91) TL (Table 1).

### Content validity

The translated scale, consisting of 21 items, was judged by the expert panel for relevance and phrasing of the items. For each item, the experts could suggest possible improvements in phrasing. Subsequent revisions of the Turkish version were made and discussed again by the panel members until agreement on content was reached.

### Internal consistency

The instruments completed by 436 students were used for the analyses. The Turkish health risk scale had an overall coefficient alpha of 0.70 (Table 2). The corrected item-total correlations were acceptable [17]. The inter-item correlations ranged from 0.25 to 0.54.

### Construct validity

The calculated KMO was 0.76 with a P value <0.001, indicating that the sample was large enough to perform a satisfactory factor analysis. The first step of the factor analysis was a principal component analysis. Eigenvalues greater than one were used to determine the number of factors. The analysis revealed six factors with an eigenvalues of higher than one (Table 2). Factor

**Table 2:** Descriptive information for the health risk items retained after exploratory factor analyses (n: 436).

Scale and item	Factor loading	Item-total correlations	Alpha	Variance	Eigenvalue
Diet			0.75	12.2%	2.5
I avoid chips and fried foods by choosing foods that are baked, broiled, boiled, poached or stewed	.489	.495***			
I limit the amount of red meat I eat by eating more, chicken, fish or grains and beans	.567	.505***			
I limit the amount of fat I eat by choosing low-fat milk and cheeses, and by reducing the amounts of butter, margarine and salad dressing I eat	.638	.513***			
I limit the amount of salt I eat by not adding salt to my food, avoiding salty food and checking labels for sodium content	.484	.496***			
I avoid eating large amounts of sugar by limiting candy, desserts and soft drinks in my diet	.497	.405***			
Anger and Stress			0.60	11.8%	2.4
I get angry and annoyed when I am caught in traffic.	.649	.280***			
I get irritated and mad when waiting in lines	.703	.283***			
Things build up inside until I lose my temper	.428	.317***			
Prevention			0.75	11.7%	2.4
I conduct a breast or testicular self-exam every month and check my skin for unusual spots or colouring every few months	.537	.548***			
I have physical and dental exams every year	.572	.518***			
I get my blood pressure checked every year	.642	.537***			
I go to all my scheduled physical and mental health appointments	.639	.490***			
I consult a physician or health care provider right away when I have unfamiliar physical symptoms	.547	.439***			
Medical compliance			0.61	8.3%	1.7
I take prescription medicine only as directed by a physician	.676	.279***			
I fill my medicine prescriptions immediately.	.597	.272***			
Substance Use			0.74	7.8%	1.6
I smoke cigarettes	.432	.329***			
I chew tobacco or smoke a pipe	.682	.342***			
I drink more than 2 alcoholic drinks a day	.723	.312***			
I use recreational drugs or steroids	.621	.314***			
Beliefs about Masculinity			0.74	5.2%	1.6
I believe it is important for a person to be physically strong	.806	.272***			
I believe a person should always try to control her or his emotions	.738	.254***			
Total			0.73	59.8%	

loadings of 21 items were above 0.40 and ranged 0.43–0.80. Principal components analysis was used to explain the variations in the total scale and its factors. The six factors together explained 59.8% of the variance. Then alphas for the items were calculated. This showed that internal consistency reliability was 0.73 for the whole scale. For the first factor, Cronbach's alpha was 0.75 and factor loadings were found to be related to the diet subscale. This factor explained 12.2% of the variance. Item loadings for the second factor with an alpha of 0.60 were found to be related to the anger and stress subscale. This factor explained 11.8% of the total variance. The third factor, with an alpha of 0.75, exclusively referred to items which referred to the prevention care subscale. The explained variance of this factor was 11.7% of the total variance. The fourth factor, with an alpha of 0.61, was the medical compliance subscale and explained 8.3% of the total variance. The fifth factor, with an alpha of 0.74, exclusively referred to items which referred to the substance use subscale. The explained variance of this factor was 7.8% of the total variance. The sixth factor [alpha= 0.74] exclusively referred to items which deal with the beliefs about masculinity. The stability of the scale was established by measuring the test-retest reliability, which was 0.76. Table (2) shows the principal components analysis, followed by varimax rotation factor loadings for the scale items (Table 2).

## DISCUSSION

The results of this study showed that the psychometric characteristics of the Turkish version of the health risk scale are promising. The panel review regarding the content of the Turkish version of the scale indicated that there was no need to modify its translation and content. The Cronbach's alpha, range of individual inter-item correlations (ranged from 0.25 to 0.54) and the homogeneity of the scale seemed to be sufficient. The original scale did not stress individual inter-item correlations [18]. The literature suggests that the acceptable minimum point for individual inter-item correlations is 0.30 [19,20]. However, few items had 0.25–0.29 item correlations and thus met item sufficiency criteria [15]. The findings of the current study are consistent with the available literature. Factor analysis with varimax rotation indicated that, with regard to the content, six factors could be discerned: diet, anger and stress, prevention care, medical compliance, substance use dimensions and beliefs about masculinity. The original scale [18] reported that same six dimensions. The findings of the current study are consistent with the results of Courtenay and colleagues' study.

In the study, the six subscales together explained 59.8% of the total variance; Cronbach's alphas ranged from 0.60 to 0.75 for the six dimensions. Courtenay et al. [18] reported the six factors combined to account for 33.98 percent of the variance. Courtenay et al. [18] found Cronbach's alphas ranged from 0.53 to 0.78 for the six dimensions. Published literature suggests that a reliability of 0.70 is considered acceptable [19,20]. In this study, total internal consistency and explained total variance had adequate criteria. DeVellis [21] stated that an alpha of 0.60–0.65 may be dissatisfactory. In this study, alpha coefficient of subscale was unsatisfactory, but may be satisfactory for other subscales and the whole the scale.

When the items in the Turkish scale were compared to the

original scale they were found to be the same in terms of linguistic equivalence. As a result of this, KMO was calculated to ascertain whether the sample was large enough to perform factor analysis. The KMO was 0.76 in this study. This finding indicates that the sample was large enough to for a satisfactory factor analysis and the further validation [factor solution] could be processed with similar sample size in the current study. Hence, the sample size in this study was adequate for factor analysis. Factor analysis yielded that all of the factor loadings were above 0.40 and factor loading of the items ranged from 0.43 to 0.80 in the scale. Courtenay et al. [18], found that items factor loadings ranged from 0.43 to 0.84 in the scale. The acceptable minimum point of 0.40 for factor loading was achieved in the current scale [20].

Test-retest reliability of the scale was 0.74, and its subscales were 0.70–0.78. According to the results of this study, construct validity of the scale was obtained. It is customary to state that measurements of repeatability for group comparisons should be at least 0.70 [20]. The test-retest reliability was adequate for the scale and its subscales.

Even though the sample size was large, the findings in this study must be interpreted with caution, because a non random sample was used.

In conclusion, this study confirmed the reliability and validity of the scale in this sample of Turkish adolescent. The Turkish version of the health risk scale has shown statistically acceptable levels of reliability and validity. The scale is important because it provides standardized data in adolescent health risk behaviours. The application of a methodology accepted by the scientific literature makes available the comparison of the data obtained in different languages.

It is recommended that this scale should be further evaluated both in different regions of Turkey and in diverse populations. Once a valid and reliable scale is ready to be used, it can be used to measure outcomes in an intervention study and, as mentioned above, be tested in different cultures.

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